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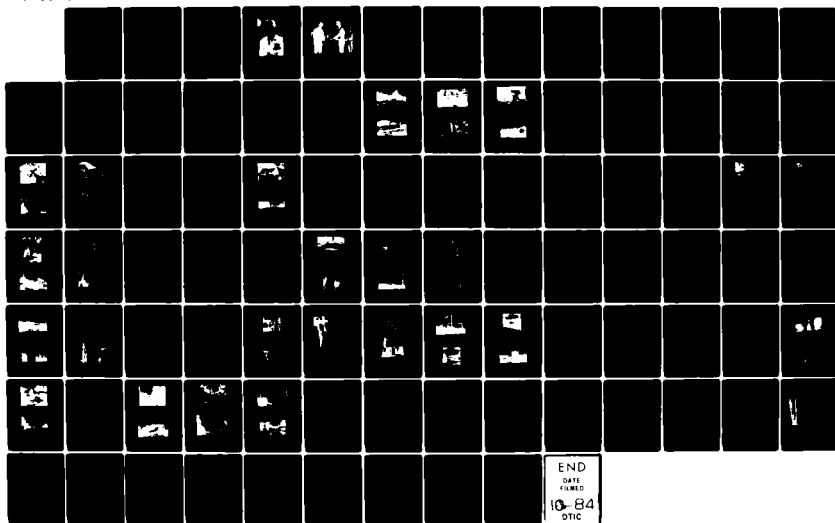
END OF TOUR REPORT JULY 1979-JUNE 1982 COLONEL DIBRELL
C STOWELL COMMANDER(U) CIVIL ENGINEERING SQUADRON/HEAVY
REPAIR RED HORSE (819TH) APO NEW YORK 09120 JUN 82

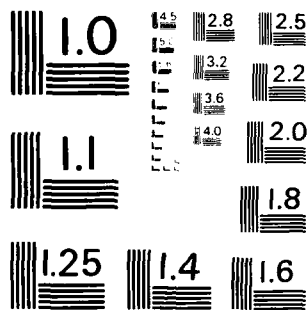
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**END OF TOUR REPORT
JULY 1979-JUNE 1982
COLONEL DIBRELL C. STOWELL
COMMANDER**

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Figure 1
Colonel Dibrell C. Stowell
819 CES/HR Commander
July 1979 June 1982



Figure 2
Opening Ceremony
Red Horse Headquarters
RAF Wethersfield
BG Lustig, USAFE/DE (L)
Col Stowell, 819 CES/HR/CC (C)
Lt Col Main, 819 CES/HR/CD (R)

FOREWORD

The relocation of the 819 CESHR to RAF Wethersfield, United Kingdom, in April 1979 opened a new chapter in the squadron's proud history and tradition of "can do, will do, have done" accomplishments. As the beddown of the first generation of RED HORSE operations began in England, we realized that an exciting and unique mission was charged to us. This mission challenged us to simultaneously accomplish our newly assigned Rapid Runway Repair (RRR) mission, along with maintaining the RED HORSE traditional mission of rapid deployable engineering capability and conducting a comprehensive construction program throughout Europe, Africa, and Southwest Asia. In addition, the complexity of our beddown was further complicated because RED HORSE's "right to work" in England demanded constant attention through delicate negotiations.

Our record of accomplishment is a testimony to the capability of the 819 CESHR. The professionalism, skill, and sense of urgency demonstrated are sources of great pride to those who were part of this team.

In 1979, the 819th Civil Engineering Squadron Heavy Repair worked primarily on developing and implementing its beddown facilities and procedures. Today, the mission of RRR plays a major role in the RED HORSE mission, as well as maintaining a rapidly deployable force in support of worldwide Air Force commitments. Effective management of these missions was a key factor in the success and accomplishments of the 819 CESHR.

INTRODUCTION

INTRODUCTION

The 819th Civil Engineering Squadron Heavy Repair has completed the third year of its construction activities, Rapid Runway Repair (RRR), and rapid deployment mission at RAF Wethersfield, United Kingdom. This report discusses many lessons learned while completing training operations in USAFE and how many breakthroughs were accomplished with PSA and why.

Initially organized in February 1966, the 819th was assigned to Phu Cat Air Base, Republic of Vietnam, on 15 April 1967. There, the squadron was awarded three Air Force Outstanding Unit Awards, of which one was Distinguished with Valor. During 1970, the 819th was relieved of duty in Vietnam and subsequently assigned to Westover AFB, Massachusetts. During 1973, all was transferred to McConnell AFB, Kansas. While at McConnell AFB, the 819th earned three additional Outstanding Unit Awards.

During the 819 CESHR's tenure in Kansas, the rapidly growing Warsaw Pact offensive capability began to present a more ominous threat to NATO. Especially vulnerable to the Warsaw Pact's formidable aerial arsenal were the UK airfield pavements. At the time, the responsibility at each base of repairing devastated airfield pavements in the UK fell on only 25 base personnel with little training or equipment. Since neither the British nor United States Governments had an in-place Rapid Runway Repair (RRR) capability, USAF relocated the 819 CESHR to RAF Wethersfield to assume the major responsibility of RRR.

Hence, the primary mission of the 819 CESHR is to provide a RRR and airfield damage repair capability at USAFE bases throughout the UK. The 819th is also tasked with the classical RED HORSE role of providing a highly mobile, self-sufficient unit capable of performing force beddown, heavy Bomb Damage Repair (BDR), and other engineering support of aircraft operations in a bare base environment. In order to accomplish these tasks, the 819th maintains an active training posture by completing command-directed construction, maintenance, and repair training projects throughout USAFE. This training program keeps the squadron personnel proficient in RRR and classical construction skills. The first construction training objective undertaken by the 819th included the beddown of its 400 assigned personnel with accompanying dependents at RAF Wethersfield. ^

All the initial objectives established to beddown the 819 CESHR were successfully achieved. The first objective RED HORSE had to overcome was refining the 819th's "right to work" agreement with the British Department of the Environment, Property Services Agency (DOE/PSA). Once RED HORSE secured formal permission from PSA to accomplish the unit beddown, objectives to construct and repair various base facilities were established and met.

During the base beddown and squadron build-up of officers and airmen, a new set of objectives was established to develop an organizational and

management system which enabled the squadron to effectively and efficiently perform their mission. The following chapters describe the manner in which these objectives, along with the beddown objectives, were met. Only the highlights of significant and unusual activities are covered in this report. The 819 CESHR's long record of outstanding accomplishments has been extended and sustained during the period of April 1979 through June 1982.

CHAPTER I

COMMAND AND MANAGEMENT

COMMAND AND MANAGEMENT

OBJECTIVE: Attain full 819 CESHR operational capability to mobilize and deploy throughout Europe and Southwest Asia as soon as possible. Be ready to accomplish the UK RRR role.

SITUATION: RAF Wethersfield had been in NATO standby status since 1970 and most facilities, services, and support functions were no manned nor in operation. About 120 blue suit and Ministry of Defense personnel were operating the base. RED HORSE was to grow to 400, and the other elements assigned to the base would grow to nearly 250.

The facilities existing on RAF Wethersfield were reasonably well planned and developed by master planning standards. The base consisted of a runway, taxiway, apron system, aircraft maintenance area, munitions area, supply, civil engineering, administrative support, dormitories, recreation, shopping area, and family housing. However, a great number of the closed or mothballed facilities were rapidly approaching the point where they were beyond economical facility repair and upgrade.

Some of the better facilities were located in the aircraft maintenance area, reserved for NATO. RED HORSE established its interim headquarters in the standby avionics facility and desired to use other facilities; however, NATO would not permit it. Therefore, the industrial area was selected as the permanent home of RED HORSE. Maintenance and repair projects were programmed for upgrade of existing facilities--a RED HORSE headquarters facility, operational shops for the pavement, equipment, structures, utility branches, and for a logistics supply center. Included in the maintenance and repair project was \$100,000 for minor alteration and construction. Action had already started with the British Property Services (PSA) asking that RED HORSE be allowed to do all the construction required to bed itself down into these facilities.

It should be noted that conscious decisions were made at USAFE headquarters which impacted the mission of RED HORSE and the manning of the Detachment 1 support element of the base. The RED HORSE mission in 1979 was to provide equipment operators to perform Rapid Runway Repair (RRR) at six main USAF operating bases in the UK. The RED HORSE squadron was considered deployed in theater very near their wartime UK job. The RED HORSE worldwide mobility role was not envisioned. In fact, the CES-3 team equipment was stripped from the squadron assets before the equipment was shipped from the CONUS. CES-1 and CES-2 teams also were not envisioned.

Therefore, the squadron was essentially the UK RRR squadron. The RRR mission used 39 people at each base (6 times 39 equals 234 men). Rationale then followed from USAFE headquarters that the RED HORSE unit would accomplish selected items of base support for Detachment 1; i.e., six RED HORSE cooks in the dining hall, three RED HORSE equipment operators (drivers) to accomplish daily supply runs to RAF Alconbury,

etc. The Detachment 1 base support was also undermanned in civil engineering, services, and executive support. Changes to the RED HORSE mission in the next few months significantly impacted these manning decisions.

The country-to-country agreement indicated PSA would supply RED HORSE stores (materials) for training project construction. This decision gave RED HORSE a responsive supply system, but it took many months of refinements before the system really worked.

In August 1979, PSA granted RED HORSE permission to commence beddown facility repairs and construction. Designs were started and material order forms prepared.

During the fall of 1979 as more families and single airmen arrived at Wethersfield, it was rapidly becoming obvious to the command section that the living standard at the base was far below other nearby bases. Actions were initiated to use RED HORSE to speed rehab of existing facilities which could support the post office, library, theater, chapel, dependent school, and base exchange.

To speed PSA approval of this and additional beddown work, it was proposed to PSA that RED HORSE be allowed to accomplish decor and interior finish after PSA upgraded the mechanical and electrical. PSA granted approval and actions were initiated to obtain materials from the British.

The British government and PSA had precontracted priced construction materials and supplies available. RED HORSE was interested in using the United Builders Manufacturer (UBM) catalog for structural supplies and selected others for paint, mechanical, and electrical. Also, RED HORSE desired PSA to provide by contract bulk items such as cement, steel, rebar, steel mesh, sand, gravel, and ready mix concrete. After a lengthy period of negotiations, PSA decided to provide the materials. By this time, RED HORSE had a considerable list of items. PSA was requested to buy the items.

The quantity of items overloaded the PSA system and PSA called for additional meetings. RED HORSE stood firm that PSA should provide materials, although PSA desired to terminate the supplies arrangement. After some delay, PSA decided to provide all forms required to order the materials through the British system to RED HORSE. RED HORSE accepted the additional work load and the material orders started flowing.

Throughout this time, RED HORSE was requesting additional work approvals so that a one to two year future work plan could be formulated. RED HORSE was being granted project approvals to work on RAF Wethersfield. However, RED HORSE desired to train and work on all USAF installations in the UK. Two programs were initiated by USAFE and RED HORSE at about the same time--demolition of deteriorated excess facilities and construction of prefabricated racquetball courts.

By this time (fall 1979), RRR training was underway and additional equipment operator training was needed. RAF Wethersfield had many facilities requiring demolitions. Other USAFE Main Operating Bases (MOBs) also had several demolition projects. A request was made to PSA and it was approved. RED HORSE now had a way to get actual operator equipment training and PSA permission to work at base locations other than Wethersfield. This was one of many precedent setting firsts.

The second program which turned out to be exceptionally beneficial to RED HORSE training was an MWR contract of over 50 US manufactured prefabricated racquetball courts to be constructed at locations throughout Europe. It was proposed to PSA that RED HORSE erect several courts at locations in the UK. PSA approved this list and now RED HORSE had actual training construction projects of visible work throughout the UK. Another first, RED HORSE also was to construct courts in Turkey, Spain, Norway, Belgium, and Germany.

In January 1980, the first of two significant events happened. At the RED HORSE commanders conference, Headquarters Air Force (HAF) indicated a need to rewrite AFR 93-9 and that the four active duty RED HORSE squadrons (one in USAFE, one in Korea and two at TAC CONUS locations) were becoming too dissimilar in structure and in day-to-day operations. Some RED HORSE units could not perform as outlined in AFR 93-9, and if immediate changes were not implemented, the Air Force might disband the RED HORSE squadrons. The 819 CESHR strongly desired to gain back their mobility roles and supported the HAF initiative. HQ USAFE supported the program and the 819 CESHR started mobility training and immediately structured the mobility teams in accordance with the draft AFR 93-9. The RED HORSE teams were to be identified as RH-1, 2, and 3. Personnel for RH-1 and RH-2 teams were identified. Since the 819 CESHR was located in USAFE, its RH-3 team was considered already deployed. The RH-3 equipment shortfall was programmed into the FY 84-85 vehicle buy program.

The second event was the Iranian embassy hostage situation. A contingency facility engineering team was required to bring a bare base up to a minimum operating level. The 819 CESHR RED HORSE was tasked and a select team was deployed 15 hours after notice. The 819 CESHR RED HORSE was back in the world-wide mobility business. The squadron has continued to support this location and has accomplished nearly all the US facility construction and upgrade there.

In September 1980, RED HORSE completed their headquarters facility, Building 66. RED HORSE expended considerable effort and ensured that quality work was maintained throughout the facility. This was planned as there was some feedback from PSA that RED HORSE work would not be up to British standards and might be similar to G.I. self-help; i.e., not high-quality construction. The quality of Building 66 completely surprised PSA, especially the mechanical and electrical. RED HORSE was to learn later that the Royal Engineers have only very limited mechanical and electrical talent in their units. Therefore, the Royal Engineers have

since told RED HORSE that they do not have the capability to completely construct a 3,000-4,000 SF office building. Air Force RED HORSE units can have two to four buildings of this scope under construction simultaneously.

After construction of Building 66, RED HORSE concluded from various PSA discussions that if RED HORSE decided to construct a training facility, RED HORSE should do all the work to complete the project. RED HORSE, therefore, operates similar to that of a contractor; do a turn-key construction job and keep PSA advised of the project progress, but not ask to borrow tools, small equipment, etc. PSA had their own projects to be concerned with, and they are not structured nor funded to support RED HORSE in design, materials acquisition and storage, and tool equipment support. AFR 93-9 states the Air Force blue suit civil engineering squadrons will support RED HORSE. PSA does not have the capability to support as per AFR 93-9 nor is there currently a method to reimburse PSA if they did support RED HORSE. Throughout all negotiations, PSA insisted they provide and connect utilities to a facility. The "five foot line" around the facility is normally the dividing point. Each project is discussed and agreed upon at start of construction.

RED HORSE took a close look at all USAFE bases to see where AFR 93-9 support could be found. There are three distinct ways USAFE base facilities are maintained by civil engineering forces.

The German bases are maintained by USAF CE blue suit forces and are capable of designing a project, ordering materials, holding materials until 95% complete, and then advising RED HORSE to come in and do the construction, as per AFR 93-9.

The UK bases are maintained by PSA and they do have the capability as discussed above.

Aviano, Italy, is a fully manned USAF CE blue suit unit; however, other locations in Italy are contractor operated and they cannot support RED HORSE as per AFR 93-9. The Greek and Turkish bases are maintained by civil engineering contractors and are not set up to assist RED HORSE as per AFR 93-9.

Therefore, it became quite clear that the 819 CESHR RED HORSE had to do business differently than the 554th in Korea and CONUS RED HORSE units. Specifically, for the 819 CESHR RED HORSE to operate in Europe and construct facilities, the 819 CESHR would have to do the following: accomplish all the facility designs; determine the materials required; order required materials through either PSA, a host country, or the USAF supply system; warehouse materials until all are received, ship materials to job site, if necessary; provide all tools and equipment items necessary to do the construction job and in most cases obtain necessary host country work approval. When shortages of tools, materials, and equipment occur, contact is made with the RED HORSE operation base Wethersfield for assistance. The facility must be completed to the highest quality

standard, leaving a facility ready for immediate use and a facility that the local CE unit, PSA, or contractor can maintain.

To accomplish this additional work load, the 819 CESHR RED HORSE had to perform these functions with the assigned people. This meant the engineering branch (both design engineers and site developers), operations branch planners, and the logistics branch material control and warehousemen had a significant work load added to their schedule or we had to come up with a way to augment our assigned people.

As the project list grew, RED HORSE found a limiting factor was engineering facility design. Operations was constructing faster than the engineering branch could design the project. To solve this, a call for TDY design engineers was made. Six officers of four disciplines (electrical, mechanical, civil and architectural) were requested for 120 days. This plan worked so well that four additional groups were tasked. The base master plan, Wethersfield mission beddown, and the RED HORSE project designs were completed. RED HORSE now had a group of facility projects nearing design completion from which a one to two year work plan can be developed.

By the spring of 1981, the 819 CESHR RED HORSE was fully manned, equipped, and deeply involved in mobility training construction. The squadron was preparing and training hard for mobility, C-rating status, and for an MEI. The operations branch had teams deployed in facility construction in the UK, Turkey, and Germany. It was agreed with PSA that requests for facility projects would be submitted once or twice a year. However, single short-notice requests could be submitted. Two major projects were being constructed - a commissary warehouse at Hahn AB, Germany, and a NCO Club at Ankara, Turkey. Additional facilities supporting the airmen and families were coming on line at RAF Wethersfield.

By mid 1981, the squadron passed the MEI and attained combat ready status. RRR training was completed, including MOB mat laying personnel. Equipment necessary to complete the RRR package preposition at each MOB was delayed, with a projected delivery date of late 1982. Therefore, the squadron was unable to complete RRR NATO TAC EVAL certification. However, RED HORSE did participate at RAF Lakenheath in a nongraded exercise. The command section was actively looking for projects that would fulfill mobility, deployment training requirements and individual technical skill training. Creek Hold electrical power generation was still a problem. To partly solve this power problem RED HORSE was completing depot level repair of Creek Hold generators and refer units.

In the fall of 1981, the first deployment with the Rapid Deployment Joint Task Force (RDJTF) was planned - Bright Star '82. This mobility support exercise into the Sudan was a good test of the squadron's ability to perform the AFR 93-9 RED HORSE mission. Ground work was laid to participate in about two RDJTF deployments per year which would fill a number of training requirements by actual deployment. The 819 CESHR also devoted considerable effort developing and designing a facility support

package for RRR in the Mediterranean. Ground work was laid for potential missions to be added at RAF Wethersfield. Potential areas for RED HORSE construction were selected and submitted to London PSA for work approval.

The year 1982 started off with PSA proposing changes in the supply system due to internal PSA audit checks being required. Joint meetings led to changes and PSA added manpower at RAF Wethersfield. PSA would now take RED HORSE material orders, process the orders, do computer accounting and handle billing procedures--relieving RED HORSE of this PSA work load. PSA still provided the majority of RED HORSE material requirements. RED HORSE advised PSA that RED HORSE was using large amounts of British material at locations outside the UK. London PSA agreed to set up special project numbers for these projects and would grant fast approval. Creek Hold facility upgrade program moved forward and a large deployment was programmed. Preparations leading up to RRR in the Med were being planned. A second RDJTF deployment exercise, "Open Gate '82" was held in May. The NCO Club at Ankara was nearing completion.

In summary, the 819 CESHR RED HORSE completed its beddown in the UK and re-equipped for contingency, mobility operations in the European theater. RRR training is ongoing as is combat readiness training. Facility training construction project work approvals were obtained in the UK, Turkey, Germany, NATO countries, and other areas. Actual deployments with RDFTF are a reality. The squadron was operating throughout Europe and Southwest Asia and was following the draft AFR 93-9. The 819 CESHR programmed three construction programs: Creek Hold, Wethersfield expansion, and RRR in the Med. The 819 CESHR RED HORSE was performing its assigned worldwide mission, stationed in USAFE.

CHAPTER II

RAPID RUNWAY REPAIR

RAPID RUNWAY REPAIR

The Rapid Runway Repair (RRR) Section was assigned the responsibility to establish a first time ever RRR program for the USAF in the UK.

This encompassed a multitude of actions and responsibilities and the end objective was to assure Main Operating Base (MOB) capability to perform RRR in wartime. The training has been completed, exercises are in progress, and the criteria for certification is being finalized.

Basically, the section advises the 819th Commander and staff, MOB Wing Commanders, and HQ USAFE/DEMY in matters concerning RRR in the UK, formulates operating instructions for the squadron and Operating Locations (OLs), and manages the UK RRR training program. It also provides advice and skills for all runway activities involving AM-2 matting assembly.

Formed in July 1979 with a nucleus of three personnel, the RRR Section undertook the task of preparing the squadron and six MOB RRR teams to fulfill their wartime role. From July 1979 through March 1980, the RRR training cadre was expanded to seven instructors, trained in AM-2 mat assembly and RRR equipment operation, and organized to handle training of the actual combined RED HORSE/MOB RRR teams. A training area complete with a 50-foot diameter bomb crater, mat assembly positions, and a facility for classroom instruction was constructed on RAF Wethersfield.

The RRR Section (cadre), under the Vice Commander, scheduled and conducted all initial matting assembly training for the 819th and MOBs in the UK. Included in the matting training were hand operated tools and equipment. The above was accomplished from September 1979 through February 1980 for the 819th and with the exception of RAF Woodbridge, was conducted for the MOBs from 14 March 1980 through 1 April 1980. (Because of manning problems, RAF Woodbridge training was not conducted until July 1981.)

At this point, it was decided that to cement and motivate RRR within the MOBs and for some positive exposure for the 819th in the UK (let everyone know we were there), a matting assembly competition between the MOBs matting teams was set into motion. Through hard work, planning, and motivation of the MOB teams, the program was initiated and the green light was on.

The big day was 22 May 1980. The competition was held at RAF Wethersfield sponsored by the 819th. Five MOB teams were in competition--the winning team was RAF Alconbury, with a completion time of 32 35 minutes. During the competition, the 819th demonstrated crater repair simultaneously with matting assembly.

The entire program was such a success that it was decided that the event should be conducted annually. The event thereafter was referred to as the UK Matting Olympics. After the initial matting training and Olympics, the

training cadre was tasked to assemble AM-2 matting patches for project "Have Bounce."

In June through August 1980, the RRR cadre, plus 13 personnel, participated in the Have Bounce tests at RAF Greenham Common and Boscombe Downs. A C-130 aircraft was used to test the induced vibrations set up in the aircraft landing gear while taxiing over variations in runway profile caused by placement of AM-2 patches at different locations on the runway. Variables were speed and aircraft loading.

From July to December 1980, seven exercises were conducted using the crater at RAF Wethersfield. Personnel were trained in mat laying, equipment operation, mat anchoring, and command and control. Considerable time was spent on each training item while wearing gas masks. RRR position training of our crater commanders and repair crews began in earnest. Problems immediately surfaced; i.e., personnel with no operator permits, personnel with physical profiles, and personnel being exempted by MOB commanders from RRR duties. With RRR as a primary 819th wartime tasking and so many MOBs to cover, three-quarters of the squadron personnel had to be trained. This training consisted of assigning squadron personnel to specific positions on crater repair teams, designating RED HORSE troops to a specific MOB RRR team, and qualifying each on his assigned equipment. The Pavement and Equipment Shop qualified their people; the cadre qualified the remaining squadron personnel. Classroom instruction was conducted, then the crews performed actual crater repair and practiced team dispersal. The availability of personnel and shortage of proper equipment for this phase of training was a major obstacle. Non-availability of personnel was caused by the large number of project TDY commitments. Correct RRR equipment had not arrived from the US and special tools were still being purchased and shipped to the MOBs. Examples of equipment problems were: 10-ton dump substituting for a five ton, HD21 dozer versus TD 15, Huff 90 loader versus Case 50 loader, etc. As the necessary vehicles, equipment, AM-2 matting, and material were stored at each MOB, permanent Operating Locations (OLs) (each staffed by an 819 CESHR NCOIC and vehicle maintainer) were established at these MOBs to manage the prepositioned equipment.

Toward the end of 1980, equipment began arriving at the OLs. Borrowing these vehicles for the training at RAF Wethersfield eliminated the majority of the equipment problems. At this point, it is pertinent to mention the in-country equipment buy policy. The following is an in-house evaluation of one such vehicle; e.g., the five-ton British Bedford dump truck. For exercise purposes, 12 truckloads of select field material must be delivered to each crater. (NOTE: A load is defined as two buckets of fill utilizing a two and one-half cubic yard bucket.) Dump trucks are actually loaded with select fill, driven to the site where dumping is simulated, and returned to the storage area, dumped, refilled, etc. The Bedford vehicle has a GVW of 17,000 pounds and an empty weight of 8,500 pounds. Five cubic yards of aggregate (in our case, crushed limestone) weighed in excess of 12,000 pounds. Thus, the Bedford can carry only a little over three and one-half cubic yards. That means 17 truckloads



Figure 3
Rapid Runway Repair (RRR)
Crater Fill
RAF Wethersfield



Figure 4
RRR
Preparing the Crater Surface



Figure 5
RRR
Red Horse Mat Laying



Figure 6
RRR
Gas Attack
to the
Mat Teams

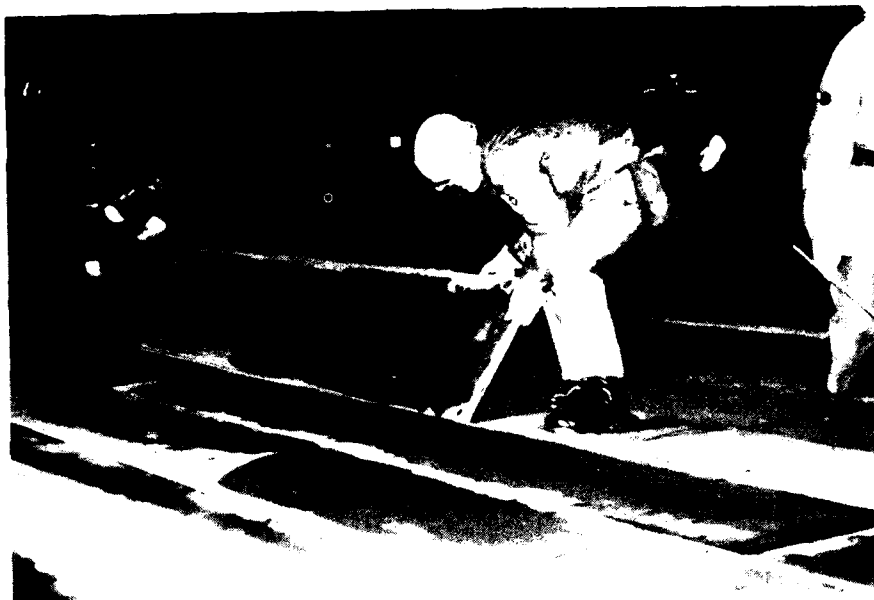


Figure 7
 RRR
 Augmentee Training
 Mat Laying at Night



Figure 8
 The First Winning Crew
 RRR Olympics
 RAF Alconbury

instead of 12, increasing our overall crater repair time significantly. Several other factors such as small tires, low frame clearance, etc. also proved to make the Bedford dump inadequate. This was identified to USAFE and AFESC.

At each MOB, the RRR team structure consisted of the team OIC and 51 matting personnel from the MOB with the team NCOIC and 38 RED HORSE equipment operators serving as the crater repair team. Originally, for team integrity, all 819th members were assigned to one of the six specific MOBs. This idea floundered because of 819th personnel being frequently TDY elsewhere in the command on construction projects. Corrective action in this matter was to place all RED HORSE team members in a manpower pool available for tasking to the MOB requiring a RRR team. This procedure worked in most situations. This gave fairly good continuity to management of the teams at a specific MOB.

Because of the current AFSC authorizations for a 400-man RED HORSE Squadron, we couldn't comply with alignment by AFSC as depicted in AFR 93-2; i.e., crater commanders were senior NCOs selected from any AFSC that happens to be assigned to the squadron. We had no fill site supervisor, only a spotter. This spotter is normally a person that cannot be used elsewhere on the team (profile, no license, etc.). A further deviation is that, in some cases, nonequipment operators are required to operate vehicles.

As the necessary vehicles, equipment, AM-2 matting, and material would be stored on each MOB, permanent Operating Locations (OLs) (each staffed by two 819 CESHR NCOs) were established at these MOBs.

The RRR training cadre decided a classroom training aid was needed to assist in training during inclement weather and to assure that all RRR team members knew where they fit into the overall RRR operation.

The aid consisted of a scale model of an OL, dispersal site with foliage and hills, aircraft taxi strip, hardened shelter, a cratered runway (the ability to accomplish crater repair in stages was also incorporated), and a miniature set of equipment required for one crater repair. This training aid was of exceptional benefit, not only for its original intent, but for newcomers and visitors briefings.

Throughout the winter of 1980 and spring and summer of 1981, several off-base RRR exercises were conducted. These exercises are vital and must be allowed to continue. There are several reasons for the continuing: to assure that we have sufficient material and equipment at the MOBs capable of doing the job, to iron out the rough spots in our training program, team exposure to night operations in unfamiliar areas on their own MOB (primarily flight lines) exposure to the heartaches of assuring mission accomplishment after loss of vital equipment, learning to manage correctly and react swiftly under pressure, and to demonstrate to the MOBs that the RRR teams are ready and willing to perform their primary mission.

The second annual Matting Olympics was conducted 21 July 1981, again hosted by the 819th at RAF Wethersfield. By this time, the event had attracted the attention of USAFE and Brigadier General Lustig, DCS/Engineering and Services and Major General Baxter, Third Air Force Commander, were in attendance. The event was recorded by Anglia Television. This Olympics had six MOBs in competition, and RAF Bentwaters took the trophy in 32.30 minutes. The event was received so well that Brigadier General Lustig, HQ USAFE/DE, directed that the Olympics would be made an annual USAFE-wide event incorporating teams from Germany and Italy along with the UK.

After the events of 21 July, training in the RRR section continued much as in the past. Four off-base exercises were scheduled. Of these four, only two were conducted. This is a good average considering the overall squadron TDY commitments.

Approximately \$15,000 worth of crushed limestone for RRR select fill was procured, funded from USAFE's Base Recovery After Attack (BRAAT) program funds. We used the procured aggregate for training in crater surface roughness.

On March 1982, the USAFE Matting Olympics was conducted at Ramstein AB, Germany, sponsored by the 7002nd CE Training Flight. The winning team was from Ramstein with a (as far as we know) world record of 18.20 minutes.

Other than personnel and equipment shortages, the major problem throughout the past three years has been educating MOB commanders and their staff on the importance of RRR training in the UK. This is complicated by the MOBs overloaded manpower commitments during exercises. To keep high visibility in the RRR area, frequent visits by the 819 CESHR Commander and staff were conducted to the MOBs to discuss the RRR program with wing and base commanders.

In March and June of 1982, the RRR cadre assisted the Royal Engineers in AM-2 matting assembly. This was a short-notice requirement, but was exceptionally worthwhile as they required experience in runway construction (using AM-2 matting). Specific units trained were the 50 Field Squadron (RRR) of the 36 Engineer Regiment, Maidstone, UK, and the Third Field Squadron the 22nd Engineer Regiment, Andover, UK.

CHAPTER III

MOBILITY

MOBILITY

As late as November 1979, in the beddown of the 819 CESHR in the UK, there was no air mobility role foreseen for the squadron. From all available beddown documents and discussions with HQ USAFE/DE, it appeared that the Rapid Runway Repair (RRR) wartime commitment to six UK Main Operating Bases (MOBs) had, for the 819th, completely replaced the traditional RED HORSE commitment for generating RH-1, RH-2, and RH-3 air mobility packages. Already based in the European theater, the 819 CESHR was considered "deployed." Additionally, the Program Guidance Letter for Beddown of the 819 CESHR stated there would be no air mobility support (use of airfield, host base mobility processing unit, etc.) required.

The first hint of an air mobility commitment came in a 6 December 1979 message from HQ USAFE/DE, which indicated some thinking that the 819th should have the capability to deploy "scaled down" RH-1 and RH-2 packages. The 819th LG requested from HQ USAFE/DEX/DEM definition of "scaled down" in terms of AFSCs and equipment. USAFE's concept of the 819th's mobility requirements expanded during the following month, resulting in a 27 February 1980 DEX message to HQ AFESC proposing that the 819th should have full RH-1, 2, and 3 capabilities. HQ AFESC approved this proposal 25 April 1980 and the 819th began its mobility training and exercising.

The 819th LG planned milestones and developed a timetable to achieve mobility readiness by 1 February 1981. The first step was to devise an effective recall system; numerous personnel lived off base (as far distant as 50 miles), and most had no telephone. LGX pinpointed all residences on a large scale map with special markings for telephone locations, and devised a combination telephone/runner recall system. This work culminated with the first recall practice 13 June 1980.

The next step was to establish a Mobility Processing Unit and to prepare personnel for deployment. Dog tags were made and shots administered. On 26 August 1980, following another practice recall, all available squadron personnel were walked through a mobility processing line manned by Detachment 1, 10 TRW personnel. Detachment 1, 10 TRW/DP, AC, SP, SG, and HC personnel were also learning as they checked the currency of identification cards, leave and earnings statements, emergency data, etc. On 26 September 1980, after RED HORSE personnel had had the opportunity to correct discrepancies, all available personnel were again "processed" with improved results.

It was now time for all sections to learn to prepare their RH-1 and RH-2 equipment for air deployment. Tasked by Colonel Stowell to be prepared for a February 1981 ORI, the entire squadron pulled together toward that objective. The responsibility for loading, documenting, and processing each increment was assigned to a specific section. Four in-squadron checkpoints were also established to process and inspect equipment. DEOS was given responsibility for operating the wash rack; LGT, the vehicle

inspection point; DEOU, the fuel/defuel station; and DEOR, together with LCC and CCQT, were assigned responsibility for final load inspection point. Detachment 1, 10 TRW, still was not convinced of any commitment to assist with Air Cargo Terminal (ACT) operations so 819th personnel were required to load their own equipment onto support aircraft. DEP was assigned the task of preparing (washing, documenting, and processing) all heavy construction equipment, while other sections were assigned M-35's, trailers, and dump trucks on which to pack their secondary loads. DEOS went to work constructing plywood containers for LCS's tents, weapons, and ammunition; for LGT's spare parts; for SVF's field kitchen equipment, etc. All sections developed packing lists, load lists, placards, and hazardous cargo documentation for their assigned increments. Personnel from sections responsible for deploying hazardous cargo were familiarized with their duties by LGX, and later certified through proper courses of training.

During 27-29 October 1980, only one month after the previous, small scale recall and personnel processing exercise, the 819th launched a full scale, walk-through exercise of RH-1 and RH-2, which entailed marshalling all equipment for the first time. It also included an overnight encampment for RH-1 to test the sufficiency of its provisions.

As a result of the lesson learned during this exercise, many loads were reconfigured and load lists and packing lists were reaccomplished. LCX obtained 463L pallets from the 627 MASS at RAF Mildenhall (Detachment 1, 10 TRW still refused any LGT related assistance), and arranged palletization instruction by 5 MAPS personnel. While DEE structured our first set of load plans, DEOSC constructed shelters for three checkpoints--the wash rack, the load inspection point, and the marshalling area.

At this time, LG sought HQ USAFE/DE assistance in defining deployment parameters and, more particularly, ORI parameters. The little guidance that was received, as was typical concerning LG matters, was too slow in coming to be of any assistance. One question of major importance during this time concerned which departure airfield to plan on using for deployment/ORI purposes. At RAF Wethersfield, Detachment 1, 10 TRW, had neither the personnel to activate the runway, the equipment to service or load aircraft nor the inclination to provide any deployment support. The 819th's ability to shuttle its heavy equipment over the road to another departure airfield (e.g., RAF Mildenhall) was limited by its shortage of trailers. Having only one trailer, the 819th requested HQ USAFE/DEM assistance in the matter. The joint HQ USAFE/DEX/DEM response was a message tasking the 819th to be capable of deploying from both the home airfield and one other airfield with plans to support both. Sufficient trailers were placed in the out-year buy programs. As an interim measure, we would seek truck/trailer transport support from Alconbury and other bases in the UK.

As a result of this tasking, the scenario planned for the next exercise, 18-19 November 1980, called for a simulated convoy to another airfield for



Figure 9
Mobility Processing Line
RAF Wethersfield



Figure 10
RH-1, 2, & 3 Equipment
Marshalled



Figure 11
Loading a 5-Ton
Dump Truck on
a C-146



Figure 12
A Light-Air Goes Aboard

follow-on air deployment. Once the trailer was loaded with equipment to be shuttled to the airfield, it was parked to the side and not allowed to be down loaded for re-use for three and one-half hours. By working around the clock in shifts, the squadron was able to meet a 48-hour RH-2 response time, marshalling all mobility equipment then on hand.

We had accomplished two mobility exercises, one simulating deployment from RAF Wethersfield and the second simulating deployment from RAF Mildenhall. It was now time to structure our procedures into a mobility plan. With Detachment 1, 10 TRW, still refusing any LCX or LGT involvement in RED HORSE mobility, the 819th set out to write its own mobility plan, using the AFR 28-4 format, with willing assistance from Detachment 1, 10 TRW/DP in matters concerning personnel processing. By 1 December 1980, each Mobility Operating Procedure (MOP) required for the plan had been assigned to the appropriate section for drafting.

Meanwhile, other mobility preparations and refinements were being accomplished. LGT devised a means of lowering dump truck headache racks to allow the dump trucks to fit on C-130 aircraft. LCX compiled all hazardous cargo forms and ensured adequate numbers of personnel were authorized and trained to certify them. Each section and checkpoint drafted checklists to outline their mobility actions and responsibilities. DEOS constructed signs to designate aircraft chocks. LG gathered together the squadron's NCOs most experienced in mobility matters and formed a self-inspection team. Almost every section made adjustments to its load configurations and reaccomplished packing and load lists. DEE then reaccomplished the load plans.

Still preparing for an ORI in February 1981, 9-12 December 1980 saw the largest scale exercise yet conducted by the 819th. All equipment was prepared for deployment and marshalled into chocks. Squadron personnel, instructed by 5th MAPS personnel, then loaded and unloaded eight selected loads into a static C-130 aircraft. Then, RH-1 and RH-2 deployed to the north side of the runway and set up camp for two days of employment training.

Still undertaking mobility transportation responsibilities assigned by AFR 28-4 to the host base, the squadron requested full MAC affiliation training from the 435 TAW at Rhein Main AB 5-8 January 1981, during which ten DEE personnel were trained in load planning, and 50 RH-1 and RH-2 personnel received classroom aircraft loading training.

Having coordinated with the 627 MASS at RAF Mildenhall and established a final checkpoint outside the air freight terminal at RAF Mildenhall, the squadron initiated a 12-13 January 1981 exercise during which RH-1 and RH-2 personnel deployed all equipment (except outsized) over the road to RAF Mildenhall under actual orders, and in conjunction with the 625 MASS, sequentially loaded the equipment into C-130 aircraft.

On 13 January 1981, we received notification of having achieved MAC Affiliation Category II status.

By 23 January 1981, the drafts of each mobility plan MOP (except the Transportation Control Unit (TCU) and ACT MOPs, for which Detachment 1, 10 TRW/LGT had been assigned responsibility) had been completed by the assigned sections. By 20 February, LG had integrated the separate MOPs into a draft mobility plan which was distributed for use by 15 April 1981. It was LG's intention to refine the draft during the next few exercises and thereafter publish a formal plan.

The prospect of receiving an ORI was now viewed as slim due to the prospects of receiving an actual contingency tasking and the consequent decision that the 819th would receive only an MEI during the coming summer. One more major exercise was conducted before mobility lost priority to a host of other commitments. A week-long exercise was initiated 18 May 1981; during this time RH-1 and RH-2 were tasked to marshall all equipment for air deployment from RAF Wethersfield, to static load the equipment onto a C-130 aircraft, to convoy to a location north of the runway, and to set up camp for two days of employment training. During the employment training when the primary purpose was to unite assorted RH-1 and RH-2 positional fills into working teams, all tents were erected (complete with floors), the perimeter road was repaired, and the base dump was cleared.

During June and July 1981, LGX, with the rest of the 819th, received a USAFE Management Effectiveness Inspection. The AFR 28-4 designation of base and squadron mobility responsibilities had become so ignored (because of Detachment 1, 10 TRW's short manning and the 819th's efforts to span the gap) that 819th LGX was given a marginal rating for not completing the mobility plan. The only parts lacking were the TCU and ACT MOPs which Detachment 1, 10 TRW/LGT had not completed. Though the MEI report acknowledged the shortfalls to be the Detachment's, it assigned the marginal rating to 819th LGX. The report read:

"a. PROBLEM: The unit mobility plan was incomplete, not coordinated, and required additional information. CAUSE: Detachment 1, 10 TRW failed to provide instruction to MOPs three and five. IMPACT: Planning factors for all mobility work centers were unavailable. RECOMMENDATIONS: Detachment 1 draft the required MOPs and the 819 CESHR mobility officer have the draft mobility plan coordinated and published.

"b. PROBLEM: Transportation Control Unit (TCU) functions had not been established. CAUSE: The host unit had not provided augmenters and the 819 CESHR/LG had not elevated the problem to HQ USAFE. IMPACT: The lack of TCU work centers could delay mobility deployments. RECOMMENDATION: The host unit provide and train sufficient augmenters to establish the TCU work centers."

The next exercise, 10-15 September 1981, was planned around operational commitments. Personnel and equipment not required on priority projects participated in the exercise which began with a recall, tasked selected increments, included MAC Affiliation load planning and aircraft loading instruction, and terminated with static loading of a C-130. Overall



Figure 13
Starting Tent Erection



Figure 14
The Completed Product

rating of the exercise was unsatisfactory due to numerous personnel and equipment processing errors. Also, the MCC had waived many problems rather than solving them. Vehicles could not be washed adequately due to failure of the wash rack oil separator (i.e., washing solvents could not be used). Vehicles could not be weighed due to a USAFE-wide problem of no reliable weighing scales available. Though Detachment 1, 10 TRW provided excellent personnel processing support, Base Transportation still did not generate TCU, ACT, or Air Passenger Terminal (APT) functions.

In August 1981, Detachment 1, 10 TRW, became more supportive of 819 CESHR deployment requirements. Mobility augmentees from various Detachment 1, 10 TRW agencies were designated to assist Detachment 1 Transportation personnel during exercises/deployments, and Detachment 1/LGT began to train them to perform TCU, ACT, and APT functions.

The Mobility Control Center, which performed poorly during the September exercise, was given a command post exercise 14 October with a RH-1 and RH-2 airlift scenario. The MCC was instructed to identify personnel required to deploy, and those required to operate the checkpoints, to identify the specific pieces of equipment which should be deployed, to identify all limited factors, to generate all required messages, to prepare and conduct the X + 2:00 concept briefing, to identify airlift requirements for tasked personnel and equipment, to prepare a schedule of events, to develop a deployment FME listing, and to complete required load plans.

On 7 November 1981, all squadron personnel not participating in the RRR exercise at RAF Mildenhall were instructed to report to Building 73 to participate in a mobility readiness check. Locator cards, ID cards, recall roster data, mobility training records, leave and earnings statements, dog tags, and shot records were checked for currency. Also, Government drivers licenses were checked for pintle hook, flight line, and gas mask certification. Though successfully increasing the short-term mobility preparedness of those who participated, only 45% of the squadron responded due to TDYs and other commitments. Previous mobility practice bore fruit on 17 November 1981 when 26 personnel and their bags deployed via C-130 special airlift from RAF Wethersfield to participate in the Rapid Deployment Force Exercise Bright Star '82.

The next mobility exercise was scheduled for 2 December 1981. Due to heavy operational commitments, only one day was allotted for mobility training. One backhoe, one grader, one fuel truck, one water truck, one truck tractor and 60-ton trailer, five roll drum fuel bladders, and one jeep were selected for deployment preparation. The primary purpose of the exercise was to provide hands-on training for Detachment 1, 10 TRW/ACT augmentees who had, by now, received classroom instruction concerning their mobility roles. Also, 60 RED HORSE personnel were processed, and the same 60 personnel received palletization training from 5 MAPS instructors.

Because the 819th had not had a full-scale exercise since September 1981 due to operational commitments, we launched into a full exercise the week of 5-9 April 1982. The exercise began with MAC Affiliation load planning instruction on Monday and terminated Friday with the static loading of six loads of equipment on a C-130 aircraft. All available RH-1 and RH-2 equipment was prepared for air deployment from RAF Wethersfield. Significant additions to the exercise included the first-time distribution of an exercise schedule of events and the first-time activation of the ACT during a major exercise. Due to a lack of qualified people, Detachment 1, 10 TRW was still unable to activate a TCU or a full APT. The 819th's mobility and personnel readiness preparations again contributed significantly to an actual deployment where, on 7 May, 12 personnel deployed to Exercise Open Gate '82. By 15 May 1982, the mobility plan had been completed (Detachment 1, 10 TRW/LGT added the TCU and ACT MOPs and the other MOPs were realigned to accommodate them), updated and refined, coordinated, and mailed to Lindsey Air Station for publication (collating facilities were not available in the UK). Though the mobility plan contained all AFR 28-4 requirements and was detailed in some areas, it was recognized by the LG as only a beginning effort. It was written primarily by squadron personnel at a time when the host base was too slimly manned to offer significant mobility support, during a time when the 819 CESHR was the only deployable unit on the base, and when the 819th was assigned only one logistics planner.

In summary, during the 819th's initial three years in the UK, mobility reached its zenith in the December 1980 - January 1981 time frame, after arduous preparation for an ORI which never occurred. Beginning early summer 1980, when there was a whiff in the air of an impending ORI, all sections began to unite in common effort to build a mobility structure second to none. That effort was enhanced by the commanders giving mobility first priority, by the dedicated efforts of a number of NCOs with prior mobility experience, and by the abundance of self-help skills and positive attitudes which pervaded the 819th. The effort was impeded somewhat by the lack of day-to-day assistance from the host Base Transportation Unit performing such functions as teaching the required mobility courses, coordinating hazardous cargo certification courses, securing 463 pallets, reviewing DD Forms 1387-2 for accuracy, arranging MAC Affiliation training, etc., and the absence of TCU, ACT, APT, and SMP functions during deployments/exercises. The effort was also impeded by the lack of host base LGX support in drafting the mobility plan and performing Mobility Control Center functions during exercises. A mobility commitment had not been envisioned for the 819th in the UK, the host base had not been staffed or equipped to support it, and the base made no significant efforts to adjust for it. So, the 819th became largely self-sufficient in mobility matters. That self-sufficiency was not without cost however. There were shop manpower costs in constructing mobility containers, DEE manpower costs in classroom hours spent learning load planning skills, DEOP costs in the time spent practicing aircraft loading skills, and LG management costs in the time required of the LG to perform base and squadron mobility responsibilities.

Probably the most significant, lasting result of the mobility efforts expended by the 819th during its first three years in the UK will prove to be the planning groundwork which gave a share of mobility responsibility to every section in the squadron. For, after all is said and done, the real strength of 819th mobility has been the total involvement of talented, can-do personnel.

CHAPTER IV

CONSTRUCTION TRAINING PROGRAM

CONSTRUCTION TRAINING PROGRAM

This chapter describes the construction training program and management activities of the 819 CESHR. Through superior management of resources, the 819th focused the integrated efforts of the functional management branches which contributed towards the completion of the squadron beddown and over 60 major construction projects totaling over \$3.2 million. These training projects prepared the 819th for its worldwide mission in contingency engineering by engaging in multi-disciplined projects throughout the UK, the European continent, Southwest Asia, and North Africa.

The achievements of the squadron are detailed chronologically from its beddown to the present date, or from April 1979 to June 1982. This account is not intended to be comprehensive in its coverage. However, it is representative of the scope and diversity of the construction training program the 819th maintained to sustain its readiness posture and accomplish its mission.

BEDDOWN

The unit beddown construction program was the most demanding challenge the 819th set out to accomplish during the past three years. Several factors contributed towards complicating the unit move from McConnell AFB, Kansas, to RAF Wethersfield. First, the 819th was directed to complete in-house designs, plan the projects, obtain all materials to repair existing facilities, and construct a new building for its own beddown. Second, as detailed previously, PSA was initially a formidable road block concerning the 819th's beddown design, planning, and work approval. Finally, the 819th was given only \$340,000 O&M project funds (EEIC 52X) to beddown its 400-man unit, 1,228 pieces of heavy equipment, organic mobility equipment, and shop equipment and tools. Additionally, RAF Wethersfield was in caretaker or low-use status since 1969. Most base facilities were in badly deteriorated condition when the first beddown party arrived in April 1979. Clearly, the 819th had their job cut out for them.

Following a survey of the availability and condition of the base facilities, the following buildings were identified for alteration and repair: Building 66 - 819th Headquarters; Building 67 - Electrical and Utilities Shop; Building 73 - Pavement and Equipment Shop; and Building 346 - Base Library. The remaining squadron functions were located in base facilities requiring major cleanup and in-house repair work before these functions became operational. The building numbers with respective squadron functions were: Building 1025 - Structures Shop; Building 161 - Metal Shop; Building 199 - Vehicle Maintenance; and Buildings 157, 197, and 198 - Supply. These squadron functions were located in their respective facilities with the intent of relocating each function when additional project funds became available.

The beddown construction program progressed haltingly at best, but resulted in a learning experience for RED HORSE and PSA. The squadron engineering officers completed all the designs, keeping in compliance with British building codes and specifications. After the bill of materials and USAF material planning process was completed, the planning package was put into the PSA supply system. Through trial and error and further PSA and RED HORSE negotiations, the material planning and supply system became reactive to the urgency of the beddown projects.

The alteration and repair of Building 66, RED HORSE headquarters, was the showcase as well as the "acid" test for the 819th beddown construction program. The \$186,000 project included: new drywall partitions, double-glazed windows, interior and exterior painting, suspended ceiling, and 8,600 square feet of carpet. A new electrical system, including the conductors, lighting fixtures, power distribution panel, and smoke and fire detection system were installed under the watchful eyes of PSA. A hot water, closed heating system with radiators and thermostats was installed in conjunction with PSA's repair of the boiler room. Throughout construction, managers and workers alike were reminded of the importance of complying with British standards and of demonstrating our technical expertise despite working with European electrical and mechanical systems. Failure in either respect might have resulted in a restriction of the unit's construction training program.

The successful completion of Building 66 and the other beddown construction projects was proof to PSA of the overall design and construction capability of the 819th. Though the squadron realized PSA project approvals would not come automatically, the 819th's reputation was significantly enhanced in PSA's eyes.

UK BASE DEMOLITION PROGRAM

The beddown construction program provided sufficient training for the Structural and Utilities Section to maintain their readiness posture for Bomb Damage Repair (BDR) and bare base construction. On the other hand, the Equipment and Pavements Section was involved in only a few projects that enhanced their readiness level. To provide the needed training for the Equipment and Pavements Section, an ambitious 13-base demolition program was planned with PSA's work approval.

This program called for the demolition of category code three facilities and the removal of asphalt and concrete pavement. Facilities and pavements identified for demolition were coordinated with the local Air Force BCE and PSA officials. The Pavement and Equipment Section was tasked with the responsibility of demolishing 136 buildings on 13 bases throughout the UK. The buildings ranged in size from dormitories and World War II bomb shelters to security fencing and guard towers. Most of the buildings had deteriorated beyond the point of economical repair and were considered to be a health hazard and a possible danger to the

occupants. The removal of these facilities greatly enhanced the environmental appearance of the site and provided construction space for other badly needed facilities. Strict coordination with the local PSA offices was required at all stages of work to ensure that hazardous materials arising from the demolition, such as sprayed asbestos, POL residue, etc., were handled according to appropriate UK safety standards. The average crew was from six to ten. Obtaining the proper construction permit, a designated dump site and lack of topsoil were predominate problems throughout the UK. A great deal of training was obtained from the first two bases; after that--training was redundant. The lack of proper equipment required above average support from the Vehicle Maintenance personnel as flat tires, broken air lines, and other equipment damage prevailed throughout the projects.

This demolition program was notable in that the squadron was able to productively employ equipment operations' skills restricted to the UK by our RRR commitment. It was also the first opportunity for RED HORSE to work on the MOBs we would support in wartime. We gained familiarization with the physical layout of the installations and their assets--conversely, it gave the MOBs and our British military hosts a limited look at RED HORSE and our capabilities.

RED HORSE HEADQUARTERS FACILITY

The first major project undertaken by RED HORSE after deployment to the UK was the design and construction of the new headquarters facility. The project provided an excellent opportunity for the engineering staff to familiarize themselves with British standard design techniques and materials. It also provided the impetus for expanding the RED HORSE supply and materials acquisition process to include interface with the Property Services Agency (PSA). Finally, the project allowed the hands-on training for our craftsmen using British construction materials and tools. The construction in its entirety consisted of the gutting of the interior of a rundown, disused aircraft squadron operation facility. Approximately 1,200 SF was added to the building. All utility systems were repaired or upgraded and the building was given a facelift, both interior and exterior. There were three major problems with the construction of the building: supplies, engineering, and weather.

The interface with PSA was a tedious process of learning a new language of materials/supply nomenclature, coupled with an initial reluctance by PSA to assist fostered by a belief that RED HORSE was going to take away PSA jobs. This required maximum use of tact and diplomacy in dealing with PSA system. Additionally, many materials were not available locally in the quantity needed--having to go to United States or European sources for these items extended the delivery times fourfold.

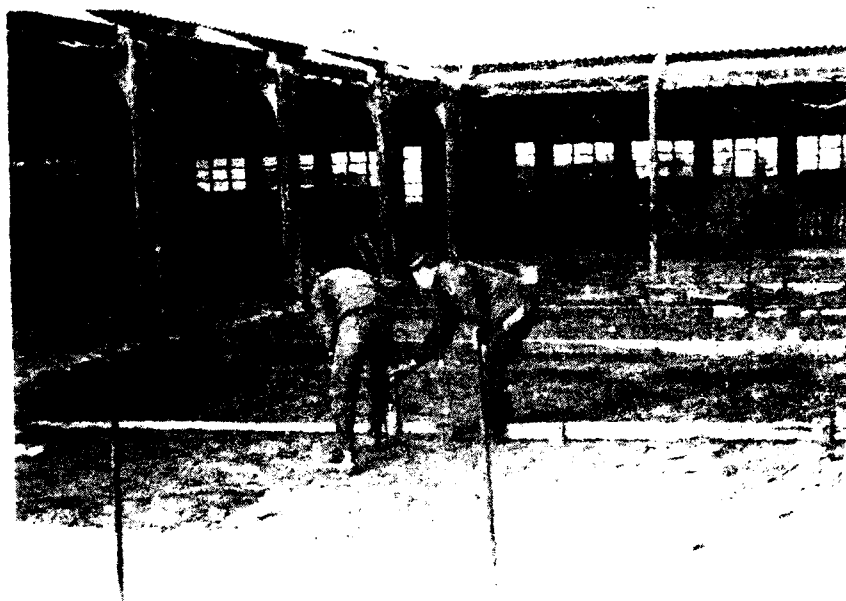


Figure 15
The Wethersfield Bldg.
HQ Demolition.



Figure 16
Pouring Slabs
Concrete Made in Concrete Mobile



Figure 17
Exterior Work



Figure 18
Interior Work



Figure 19
Demolition Activity



Figure 20
Rock Crushing



Figure 21
Another Building
Demolished

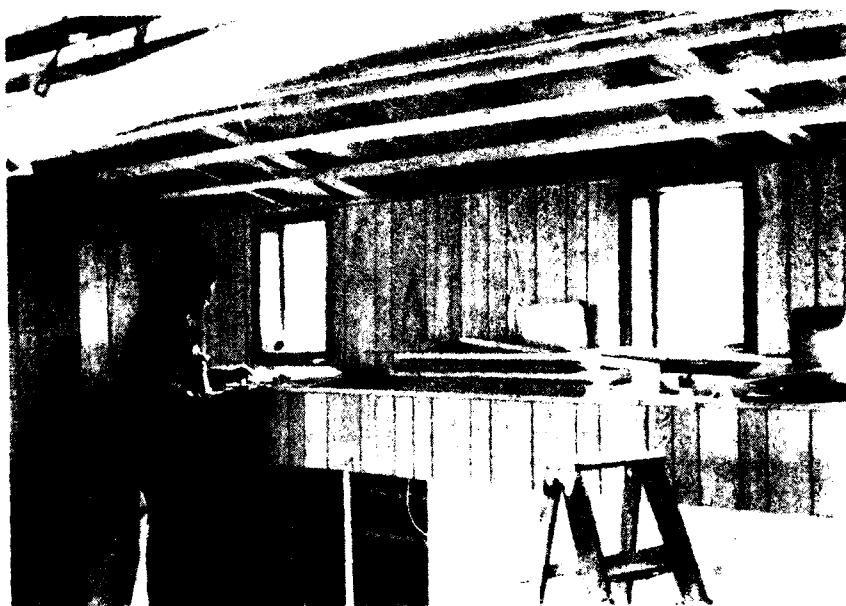


Figure 22
Finish Line Touches to
Base Laundromat

The Chief of Engineering was deployed to another USAFE location and left the section manned by young lieutenants with little or no construction experience. Due to the short-fuse suspense of getting the job done, the project was designed in phases. While it was a satisfying experience to see lines on paper turn to reality, it did preclude the opportunity to re-think after a complete design. This project was our first true test in contingency engineering design.

By the time dollars and project approval were obtained, the UK winter had set in. Snow, high winds, and icy rain were the norm for the day. As one local said, "I don't remember it being this bad since back in the 40's." Pouring the concrete foundation and columns was made more difficult by the boggy terrain around the site. With the use of field expedient methods, the site was made accessible to the equipment. After this was overcome, the first and second pours froze in spite of efforts to shield the concrete from wind and cold. This was finally overcome by putting up polythene covers with Herman Nelson type heaters and blowing hot air onto the concrete. The heaters were also used to dry out the walls and to heat the building for the finish work.

The original schedule was for seven months. This was predicated on good supply response, weather, and normal crew manning. Some of the materials required in the third month of construction were not received until the seventh month. This required work-around practices. There also were approximately 45 days of stopped or slowed operations due to the weather. The crew manning varied with whoever was available for work. The majority of our cantonments personnel did not arrive in force until the April/June time frame. When charted out IDEAL versus REALITY, this project was completed approximately 15 days ahead of schedule. The completion of this project provided a modern, eye-pleasing office type facility used as the headquarters for the 819th. The facility houses the command function, the administration and engineering staff, a large portion of the logistics function, as well as the operations center and emergency disaster control center. In addition, the construction was scrupulously examined by the local PSA to ensure compliance with British standards. The project proved to PSA that RED HORSE could provide a quality construction project. The many dignitaries who visited RED HORSE were all surprised and pleased by the quality of the craftsmanship and the uniqueness of the design. This project was a true challenge. The product is a facility of which all of RED HORSE can be proud.

INSTALL KMU 45 DECONTAMINATION UNIT
RAMSTEIN AB, GERMANY

In November 1980, RED HORSE was tasked to participate in a test program to modify existing TAB VEE hardened aircraft maintenance shelters for the chemical warfare environment. A long recognized deficiency throughout NATO was the incapability of allied forces to sustain combat operations under chemical attack. All new military construction included

requirements for inclusion of air filtration systems and decontamination chambers. However, the problem remained in the existing structures which were constructed prior to the new criteria. One idea investigated was to adapt existing portable decontamination units, KMU 450's (developed by the Army), to over pressurize and filter the air in the office/comfort space within the TAB VEE aircraft maintenance shelters. One shelter at Ramstein AB was selected as the prototype test. RED HORSE was to install the unit and make whatever adjustments/modifications necessary to the utilities and air filtration connections and decontamination unit placement over the trial period. It was a simple, straightforward structural/utilities tasking that appeared to be something our racquetball court construction team, then at Ramstein, could handle. As on many previous projects, time was of paramount consideration. The crew was broken out from the racquetball court team and prepared to start. However, materials and equipment support were not firmed up by Ramstein. The design by local agencies was also incomplete, leaving much room for RED HORSE ingenuity. The only diagrams and installation instructions were for a different version of this KMU 450. The final decision by Ramstein for locating the unit had not been made--so no materials had been ordered. This resulted in a five-month delay while awaiting materials. The host base had not identified a project coordinator, therefore, this responsibility fell to the RED HORSE team chief, who was unfamiliar with the specific offices and sections on base who must be tasked for support or assistance. This created further delays.

The original schedule called for a five-week completion. Deleting the extra travel time and the five-month delay for materials, this project was brought in two days ahead of schedule.

Pre-construction site visits are an absolute necessity when dealing with previously unknown construction. No project should be started without 95% of the materials on hand or locally available. RED HORSE should not be deployed to a base until a project coordinator has been assigned. When there are to be other organizations working on the same project, there should be a coordinated message from USAFE headquarters to all concerned which sets the priorities for all organizations concerned.

Despite any pressures to start construction early, it is imperative that all requisite design, essential materials, and personnel are available. Perhaps the most valuable lesson learned was--no matter what the circumstance, when a conscientious manager applies sound reasoning and proven field expedient methods, shortfalls are but a new learning experience encountered while getting the job done.

USAFE-WIDE RACQUETBALL COURT PROGRAM

As the majority of the beddown construction projects neared completion in September 1980, the squadron was tasked as the Air Force's primary construction agent for the command's racquetball court program. Through

bulk procurement, HQ USAFE purchased US-manufactured pre-engineered racquetball courts for erection in all the NATO countries. The command intended the courts to boost the morale and welfare of the airmen, especially those stationed in remote sites in Turkey.

The \$2,500,000 twenty-five racquetball court construction program was beneficial to the 819th's training program in several ways. The courts, constructed on concrete foundations, required up to ten different AFSC specialties, often totaling 10 to 15 per single court crew. Many of the unit's junior airmen received hands-on training. Secondly, the junior officers and senior NCOs gained valuable construction management experience as project managers or lead craftsmen. Generally, most of the officers and NCOs came from stateside maintenance-oriented CE organizations where they weren't involved in new or heavy construction. The squadron's craftsmen were able to learn and work with European construction materials and methods. Finally, each project was a mobility exercise experience. The tasking, crew preparation, shipping of tools/equipment, and deploying the craftsmen soon gave RED HORSE the knowledge to mobilize and deploy by aircraft, ship, or vehicle (land or cross channel by ferry)--a vivid actual mobility training learning experience. This learning experience prepared the squadron for a European and Southwest Asia mobilization to perform Bomb Damage Repair (BDR) and bare base construction. A few examples follow:

KAPAUN AS, RAMSTEIN AB, GERMANY
RACQUETBALL COURTS
6 OCTOBER 1980 - 9 MARCH 1981

Construction at Kapaun Air Station included: placing a 20' x 40' concrete foundation and erecting a prefabricated single racquetball court kit. The kit, manufactured by Racquetball Courts International, Inc. is basically wood frame construction. The prefab wall sections are 2" x 6" studs sheathed with 1/2" exterior plywood with sizes between 8' x 12' to 8' x 8'. The weight of these wall sections varies between 200 to 400 pounds. The roof consists of wood truss framework sheathed with 1/2" plywood and asphaltic roll roofing material. The exterior finish is asbestos-cement shingles. The interior court finish consists of 4' x 8' finish playing panels and tongue and groove maple flooring. The kit also provides 220/380 volt, three-phase, 50-cycle electrical power, and an electric heating/ventilating system. Construction at Ramstein AB included placing a 40' x 40' concrete foundation, a 50' service steam heating line and erection of a double racquetball court of the same construction as Kapaun AS.

Since these were the first of many courts to be erected throughout USAFE, the greatest challenge was that of performing highest quality and timely work with new and completely unfamiliar construction techniques. The racquetball kit construction materials and assembly sequence proved to be



Figure 23
Racquetball Court
Kapaun AS, Germany
Preparing Wall Section

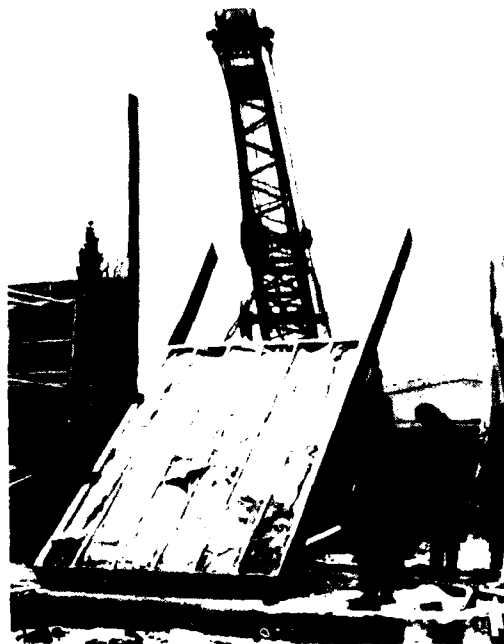


Figure 24
Starting to Raise

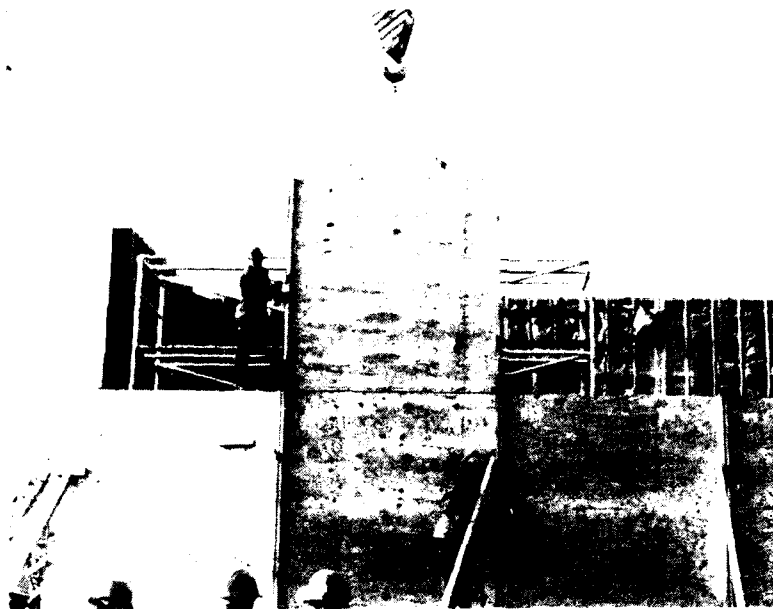


Figure 25
In Place

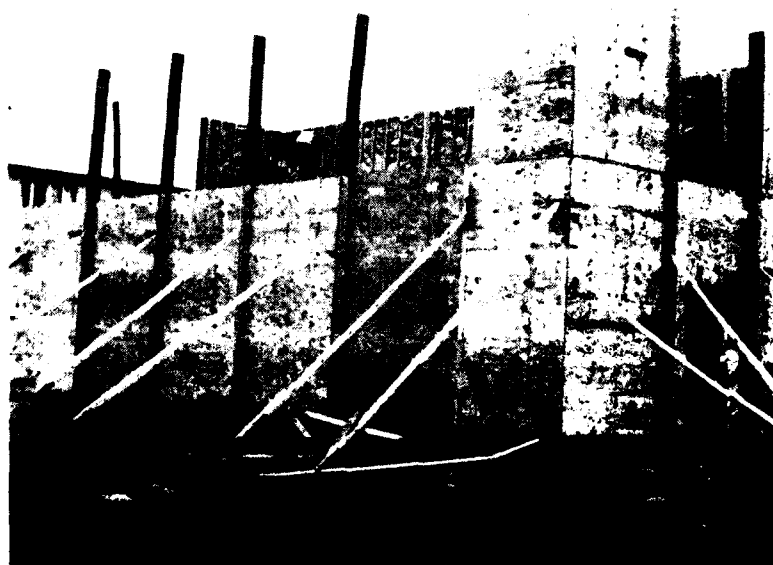


Figure 26
Taking Shape

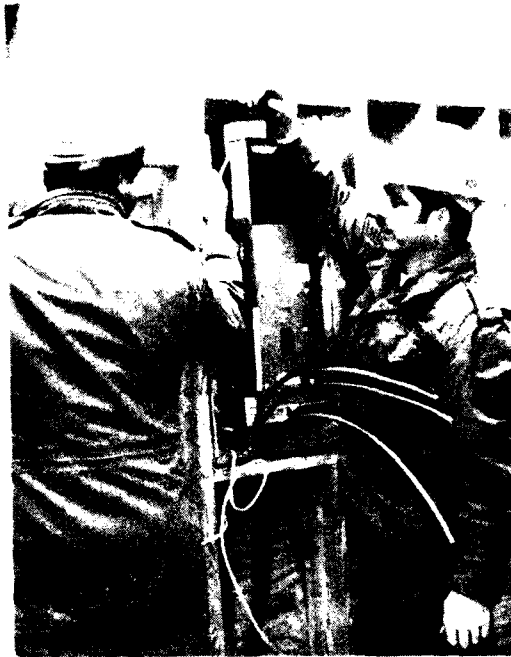


Figure 27
Electrical Work

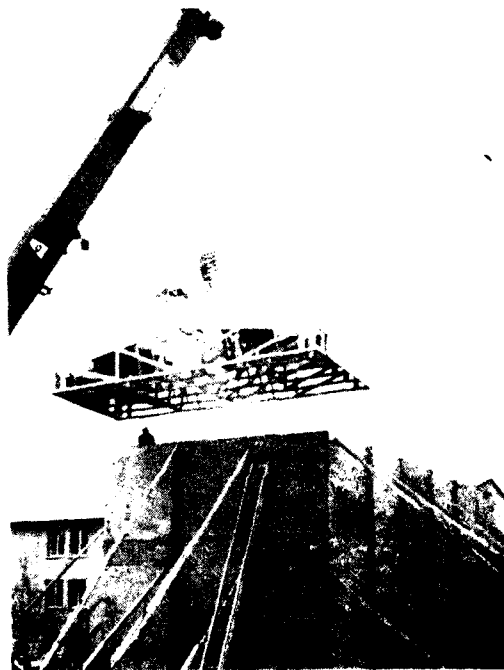


Figure 28
Raising the Roof Trusses

labor intensive and at times frustrating and cumbersome. Installing the plywood sheathing, exterior cement-asbestos shingles, and finish playing panels required many man-hours to complete.

The original project schedule called for five weeks' construction time for Kapaun AS and two weeks for the foundation only at Ramstein AB with the 86th CES erecting the double court there. However, due to weather problems and technical difficulties, the Kapaun court required eight weeks to complete and it was decided that RED HORSE would also erect the Ramstein AB kit. The double court at Ramstein AB was begun in January 1981 and was completed in nine weeks.

Assembly of the racquetball kit was not complicated and field modifications were readily done. However, due to the kit's size, assembling it was time consuming, cumbersome and, at times, a safety hazard. The size and weight of various components presented a requirement for specialized tools, scaffolding, glass suction cups, and turnbuckles. The unavailability of these tools and equipment compromised construction time and safety. All subsequent racquetball court projects benefited immeasurably from the experience gained from these projects. Lessons learned: For maximum efficiency, RED HORSE must acquire the special tools required by the construction project.

RAF FAIRFORD, UK
RACQUETBALL COURT
2 MARCH 1981 - 9 JUNE 1981

This project was the first racquetball court constructed by RED HORSE in the UK. Construction at RAF Fairford included the placement of a 20' x 40' concrete slab foundation and erection of a prefabricated racquetball court kit. The kit's composition was similar to the Kapaun AS, Germany project. Minor differences consisted of a connecting corridor used to attach the new court to the existing gymnasium, and the electrical heating system was deleted and replaced by a steam heat system installed by local contractors. The construction crew for this project was supervised and led by craftsmen who had been trained and gained hands-on experience with the Ramstein AB project. However, this did not preclude the occurrence of other new problems from cropping up. The most significant challenge was coping with the extremely wet and unpredictable English spring weather. Improper storage by the host base of materials caused damage to many of the kit's components which had to be repaired before installation. This problem, more than any other, marred timely completion of the project.

The original work schedule called for an eight-week construction time in two phases consisting of two weeks for the foundation and six weeks for erecting the court. While the first phase was completed on schedule, phase two, hampered by numerous material and weather problems, required ten weeks to complete.

Lessons learned: Projects of this nature require extreme care in the storage, care, and handling of bulky prefabricated components. The USAFE weather can rapidly cause major changes to US-made prefabricated buildings. Experience with this project resulted in the routine completion of subsequent racquetball court projects in as little as three weeks for vertical construction.

RRR OPERATING LOCATION (OL) CONSTRUCTION PROGRAM

Construction of a secure cantonment area at the six Main Operating Bases (MOBs) was essential to a successful RRR program in the UK. Eighty-one bundles of AM-2 steel matting and RRR tools are pre-positioned at each MOB, secured, and readily available to the MOB for RRR training and contingencies. In addition, a reconstructed prefabricated building on concrete foundation or the \$700,000 MOB OL construction program began January 1981 at RAF Mildenhall and was scheduled for completion on June 1982 at RAF Bentwaters. In all, the MOB OL program involved the installation of 3,600 cubic meters of concrete, 7,500 tons of gravel fill, 4,800 feet of security fencing, and three prefabricated metal Armco facilities with interior finish and utilities. The job scope at each OL varied according to whether existing facilities and pavement were available. For example, the RRR OL at RAF Upper Heyford took an 11-man crew 30 days, while RAF Mildenhall's RRR OL took six months to complete with a 30-man crew. The unpredictable British weather contributed greatly to prolonging this project.

The RRR OL program provided the Equipment and Pavements Section with their first major equipment, earthmoving, and concrete work. Before this program, the section was tasked with demolition, installing concrete pads, and hauling duties. Each OL construction job was a training session for the section.

CONSTRUCTION OF OPERATING LOCATIONS

RAF Mildenhall	MIL 80-0089	\$124,800	5 Jan 81 - 25 Jul 81 RAF
Lakenheath	LAK 80-0104	\$144,309	16 May 81 - 3 Feb 82 RAF
Woodbridge	WOD 80-0107	\$109,208	4 Aug 81 - 3 Feb 82 RAF
Bentwaters	BEN 80-0106	\$162,300	5 Oct 81 - 18 Jun 82
RAF Upper Heyford	UPP 80-0180	\$ 21,600	22 May 81 - 20 Jun 81

FENCE ERECTED ONLY

RAF Alconbury	ALC 80-0284	\$ 37,612	27 Jul 81 - 17 Jan 82
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The OL projects consisted of constructing a secured parking area for RRR equipment and to provide a classroom and offices for the permanently assigned personnel of the host organization. Initial stages of the projects required the removal of topsoil, vegetation, and concrete slabs of previous buildings. The initial crew consisted of equipment operators and pavements personnel with one or two site developers. After overburden material had been removed, the project site was excavated and graded to plan specifications. Crushed rock was then hauled to the site by dump truck and spread into place and compacted with vibratory roller. Ready mixed concrete was procured from a local civilian source and transported to the site by the contractor. After the placement of concrete, the classroom, office, and utilities were constructed by carpenters, plumbers, and electricians. A steel wire mesh fence completed the site. Heavy equipment used on the projects were: dozers, loaders, graders, vibratory rollers, and dump trucks. Small equipment consisted of: water pumps, power screeds, electrical generators, concrete vibrators, and the usual assortment of hand tools. The first OL project began 5 January 1981 at RAF Mildenhall and lasted for the duration of four months. The Mildenhall project required twice as much time as any of the other projects because of inclement weather, lack of experience, and hand-built forms. The second project was located at RAF Lakenheath and was completed in 57 days. The third project, located at RAF Woodbridge, presented no unique problems and was completed within two months. The fourth and final project was similar to RAF Mildenhall--the project was hampered by rain, snow, and cold weather. Other problems consisted of flat tires and materials arriving late. The ideal time for these projects would have been from May through October.

Lessons learned: Schedule to weather, acquire reuseable forms, and timely material support.

HAHN COMMISSARY WAREHOUSE ADDITION

The erection of the 8,500 square foot warehouse addition at Hahn AB, Germany, was the 819th's first major vertical construction project in the European environment. Originally destined for civilian contract accomplishment, twice the returned bids significantly exceeded available funds. When HQ USAFE/DE turned to RED HORSE, it gave the 819th the opportunity to prove we could handle complex engineering projects at a deployed location, under less than optimum weather conditions, using European construction materials, guided by a frequently changed German design requiring unfamiliar construction techniques. In addition, no materials had been procured prior to the construction start date. Extensive demolition of existing concrete pads and retaining walls were required as well as the placement of 180 feet of 24" storm sewer with manholes. Due to soil and weather conditions, the removal, refill, and compaction of approximately 1,500 cubic meters of earth were also required. Following the extensive earthwork and installation of exterior utilities, over 450 cubic meters of concrete were placed in the foundation

and floor slabs. The crew quickly adapted to working with German materials, erecting the pre-engineered steel frame, installing the gas-entrained concrete panels, electrical wiring, lighting, and heating system--completing the project three weeks ahead of schedule.

Lessons learned: This project provided the 819th with its first real challenge in moving large amounts of tools and heavy construction equipment from home station via both air and cross-channel surface transport within the European theater. Additionally, during the duration of the project, over 60 construction personnel were rotated through (maintaining the average 18-man strength of the crew), becoming highly experienced in European construction techniques. However, on the negative side, the required operations date and late project approval caused the 819th to start the project late in the construction season. This required significant headquarters management to get the essential materials to Hahn AB and solve engineering problems as they arose. Project was closed down once for freezing and snowy weather.

CONSTRUCTION IN TURKEY

RED HORSE involvement in Turkey began in January 1981 with CINCUSAFE-directed program "Turkey Catch-Up" (T-Cup). Initially, RED HORSE had no firm commitments for construction in Turkey other than to work upgrading air conditioning and heating systems at Incirlik. To accomplish any construction work in Turkey, RED HORSE had to overcome the obstacles of obtaining Turkish diplomatic and General Staff approval and the lack of availability of construction materials/equipment. Also, a method had to be developed to expedite flow of construction tools and materials to Turkey from England and Germany. Various HQ USAFE agencies were asked to assist us and pave the way for RED HORSE construction.

The "Turkey Catch-Up" accelerated all programs, therefore most of the major construction projects were still in the inception or planning stage. However, some critical projects were designed, funded, and ready for RED HORSE accomplishment. These included:

Construction of a \$100,000 vehicle maintenance facility at Erhac.

Construction of 11 racquetball courts at nine installations.

Construction of a \$1 million NCO Club at Ankara.

With the construction season in Turkey fast approaching, a number of important areas needed to be worked prior to sending in our construction teams. The perceptions of Turkey's lack of a modern construction industry, austere living conditions, antiquated logistics infrastructure, and highly restrictive Turkish/US military working relationships colored our initial preparations for work there. Coupled with these perceptions were the difficulties faced in getting men, material, and equipment into

and out of Turkey; constricted communications systems between Turkish bases; and a lack of knowledge of local availability of construction materials and how to procure them. To lay the groundwork, a liaison office was originally established in April 1981 at Incirlik to solve and manage the following:

Best ways of shipping materials and equipment into Turkey and within Turkey so we could track and get them on the job site on time.

Assessment of what RED HORSE or USAFE equipment and vehicles needed to be shipped to Turkey to support all projects RED HORSE would accomplish during the construction season.

Establishment of local support agreements for obtaining materials (either through supply or local purchase).

Setting up liaison between RAF Wethersfield and all host installations in Turkey to work support as billeting, messing, local transportation, and impress funds.

Adequate storage facilities for incoming supplies and materials.

Security arrangements for personnel, equipment, vehicles, and material at isolated locations and during convoy.

The RED HORSE liaison office was established at Incirlik to provide a visible, constant in-country RED HORSE presence. The liaison team initially was one officer and two senior NCOs. They made official contact in Turkey with the key offices (base commander, logistics, procurement, civil engineering, and security and services) at the various project bases. The team studied the environment in which all RED HORSE construction in Turkey would operate. A more detailed assessment was prepared for the 819th and HQ USAFE/DE to provide guidance on how best to use RED HORSE in Turkey. The team helped the in-country installations set up procedures to support RED HORSE construction teams. They then provided a focal point for coordinating all RED HORSE concerns within Turkey, working the initial logistics support for upcoming projects. The team evaluated what vehicles and construction equipment RED HORSE should ship into Turkey. Once the equipment was in-country, the liaison team controlled utilization among TDY RED HORSE teams. The liaison team also provided immediate, on-scene technical screening of all future Turkish projects proposed for RED HORSE accomplishment. The efforts were headed by Major Shoemaker, CMSgt Gage, and MSgt Spillan.

UPGRADE UTILITY SYSTEMS, INCIRLIK

An 18-man utility team (electricians and mechanical technicians) headed by TSgt Howarth arrived at Incirlik in mid February 1981 to install 20 boilers of various sizes, types, and configurations. The heating and air

conditioning systems throughout Incirlik were in a sad state of disrepair. The RED HORSE team was but a small token advance team "to show the flag" and provide coverage until Reserve/National Guard Prime BEEF teams could be generated from the US. The program included over \$2 million worth of mechanical equipment purchased by USAFE in Germany to be installed as one-for-one replacements for units at Incirlik. The team installed 14 of 20 boilers, plus 11 air-cooled condensing towers, repaired the dryers in the family housing laundromat, and assisted the contractor personnel in replacing air conditioning units in the housing area. All scheduled work was completed prior to 10 May 1981. Significant problems were encountered in obtaining local parts (coupling, valves, fittings) to install the basic boilers. Units were German source, thus European (metric) standards. Old units being replaced were US source, English standards. Additional problems were encountered in trying to install complicated mechanical equipment with installation instructions written in German. Project cost - \$214,000.

Lessons learned: Expedient engineering must be planned to interface with existing systems. Language can be overcome by screening the troops and finding ones that speak or understand the native language.

CONSTRUCT VEHICLE MAINTENANCE FACILITY, ERHAC

The Turkish AB of Erhac is located in a broad river valley adjacent to the city of Malatya. The soil in the region is sandy loam with good bearing capacity. Foundation--the project called for a reinforced concrete slab, thickened edge foundation. Building type--the facility consisted of a Soule pre-engineered steel structure. The project originally scheduled to last 60 days was completed in 45 days' time (13 April - 19 June 1981). A beneficial factor in this rapid completion was the excellent weather. The climate during the spring for the Malatya region is mild with minimal rainfall (less than two inches per month) and temperatures in the 17 degrees - 22 degrees C range during the day, with cool nights. The original crew consisted of 17 enlisted craftsmen commanded by MSgt Baker. Construction of this foundation and facility was accomplished under very austere conditions. In this region of Turkey, construction materials are scarce and of very poor quality. The project materials were procured, with the exception of the Soule pre-engineered steel building, from Germany. This was the first test of the USAFE Rapid Procurement Materials Acquisition (RPMA) system, and with high-level HQ USAFE/LGP/LGS attention, materials were provided on schedule. However, once the team was on site, any missing parts/materials were replaced through ingenious engineering expediency methods. Lack of local construction equipment, especially a crane, really challenged the imagination and logic of the team. Steel columns were set by muscle power. The trusses were placed using a fork lift with a jerry-rigged truss saddle. This project was the first all RED HORSE construction effort in Turkey--completed ahead of schedule, under cost. Project cost - \$131,416.90.



Figure 29
Racquetball Court
Balikesehir, Turkey



Figure 30
Congratulations from
Maj Gen Smothermon
TUSLOG/CC



Figure 31
Erhac Vehicle
Maintenance Facility
Foundation Work



Figure 32
Steel Going Up

EMERGENCY INSTALLATION ICE PLANT, INCIRLIK

RED HORSE was approached on 11 June 1981 by the Base Commander, Incirlik, to help in a crisis. The base ice plant was inoperative. The last one-ton ice-making machine in the plant had failed. The base had three five-ton units newly arrived; still in shipping crates. Quick inspection of the old plant revealed the facility had insufficient electrical power available to run one of the new units. The structure would require extensive modification--tearing out a block wall and removing/replacing the roof. Another facility was located where one unit could be rapidly installed. An abandoned quonset was gutted, sealed, insulated, and wired to accept the unit. The ice-making equipment was installed, connected to water, a hoist gantry fabricated and erected, and all connections, save electrical, made. Team was a composite taken from the Erhac vehicle maintenance facility crew. No electrical technicians were available. Crew consisted of 12 personnel led by SSgt McMillan. Work was completed on 26 June 1981. Cost - \$16,510.

RACQUETBALL COURT CONSTRUCTION IN TURKEY

Racquetball court construction in Turkey was beneficial in that the pre-fab courts manufactured in the United States had to be planned, shipped, stored and constructed at seven locations across Turkey.

The mobility/readiness/deployment exercise created by this project was of significant value. The squadron quickly learned how to ship, transport, etc., men and materials across Europe. In addition, communications and support of all types were developed or created where minimal existed.

BALIKESIR - \$99,300 - Completed in September 1981, the team did not encounter any weather delays. Difficulties in erection justified bringing in additional RED HORSE equipment, as our 15-ton hydraulic crane. Once this was accomplished and additional heavy duty hand tools such as automatic nail drivers and drills were acquired, construction progressed well. The Balikesir court was the first court officially turned over to TUSLOG in Turkey on 6 September 1982. The quality of workmanship was superb.

MURTED - \$80,344.29 - Located 26 kilometers due west of Ankara, Murted enjoys long, hot, dry summers with warm, pleasant autumns. During the construction period 11 September - 2 November, the weather was outstanding. Murted AB is located on a flat, fertile plain of rich sedimentary soil deposited as an ancient lake dried up. Soil bearing capacity is very high. The foundation for the court was constructed by a local Turkish contractor. The alignment and position of the anchor bolts and the surface smoothness of the concrete slab were very poor. The seven-man crew of mostly inexperienced craftsmen was commanded by TSgt

Chiasson. This court was finished on schedule and of superior quality. This was the first court to use our 15-ton hydraulic crane shipped in from England.

ESKISEHIR - \$75,812.70 - The Turkish AB of Eskisehir is located 220 kilometers due west of Ankara in a region of rocky volcanic ash soil. The soil bearing capacity is substantial. The foundation constructed by a local contractor was fair in quality. The seven-man crew, under MSgt Coleman's supervision, completed this single court five days ahead of schedule. Workmanship was quite good.

ANKARA - \$79,785.36 - The court, located in the small TUSLOG site at Balgat in the western section of Ankara, was constructed on a high-quality foundation constructed by a local Turkish contractor. The soil in the area is composed of partly metamorphosized limestone and schists, together with volcanic rock. Construction was conducted during periods of cold, damp weather, with occasional frosts and light snow. This court was of excellent workmanship and was completed eight days ahead of schedule.

DIYARBAKIR - \$68,152.59 - Located in the far eastern section of Turkey, Diyarbakir gets severe winters, short springs, long, extremely hot summers, and damp falls. The soil is extremely rocky and volcanic in origin. The seven-man crew, under TSgt Chiasson's direction, overcame many material shortages and lack of key equipment, resulting in completion of the court 19 days ahead of schedule. This set the new record (25 days) for constructing a single court by troop labor.

INCIRLIK - \$121,635.33 - Incirlik AB is located ten kilometers east of Adana on the southern coast of Turkey. The climate is hot and humid in the summer with long, pleasant springs and falls. The winters are short, mild, and wet. The soil is sedimentary clay, precompressed by desiccation and impregnated with calcarious nodules. The water table is relatively deep (greater than ten meters). The soil, being mostly clay, permits little percolation. It is classified as inorganic clay of high plasticity akin to gumbo clays in the US. It is extremely expansive soil if wetted and is, therefore, very poor as foundation material. The concrete foundation constructed on this soil by the Turkish contractor was of poor quality with numerous serious structural flaws in the concrete. During the eight months between foundation/slab construction (May 1981) and beginning our erection (January 1982), the foundation was severely cracked and upheaved by the expanding soil. The double court was erected on this uneven slab, with excessive shimming being placed under the subfloor to compensate for the uneven slab. Erection went smoothly for the 19-man team led by TSgt Morrison.

IZMIR - \$83,991.00 - Located on sandy soil on the west coast of Turkey, the court foundation constructed by a local contractor was designed and built to resist severe earthquake tremors. Foundation quality was fair. Erection went smoothly and rapidly for the 19-man crew under TSgt Dey's supervision. Quality of workmanship was outstanding.



Figure 33
NCO Club
Ankara, Turkey

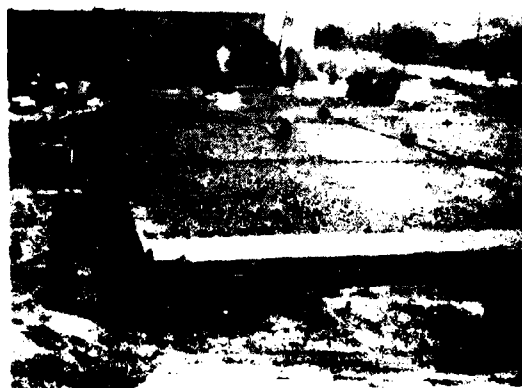


Figure 34
Foundation Slab Finished





Figure 36
Steel Going Up



Figure 37
Trusses Moving in Place



Figure 38
Last Truss

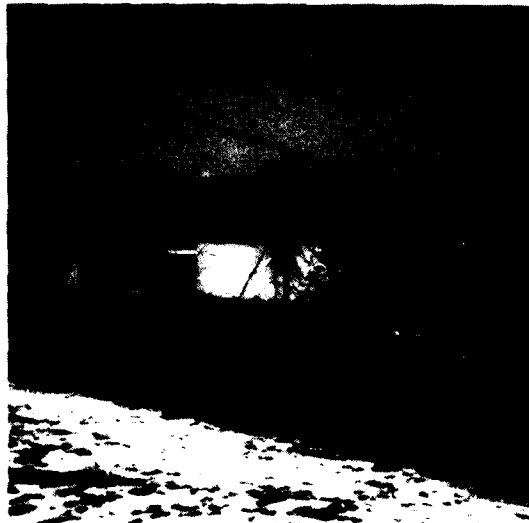


Figure 39
\$1.5 Million NCO Club
Being Closed In



Figure 40
The Completed Racquetball Court
at Erhac, Turkey

CONSTRUCT EMERGENCY TAXITRACK

On 18 August 1981, a 16-man construction team deployed from RAF Wethersfield, United Kingdom, to Norvenich AB, Germany, to construct an emergency taxitrack. Heavy equipment for the project was obtained from Spangdahlem AB on 19 and 20 August. The actual project duration was 27 work days, and working hours ranged from approximately 0630 to 2100.

Norvenich AB is a German air base with a small detachment of Americans. The majority of the RED HORSE crew's work involved contact with German organizations on the base. Thus, the language barrier sometimes made it difficult to accomplish certain items of daily business. Also, it was difficult to communicate with German contractors delivering materials. This caused delays at the job site.

Lessons learned: This type of problem must, in the future, be anticipated during the project preparation period. Inclusion of this item on the appropriate checklist in the project manager's handbook will enable personnel to determine if a problem will exist on a particular project. A craftsman proficient in that language would then be assigned to the crew or arrangements could be made with the host base to provide an interpreter when necessary.

This project was successful for many reasons. The crew was experienced, hard-working, and technically competent. Spangdahlem AB and engineering agencies at Norvenich AB provided excellent support. Good weather permitted the project to proceed quickly. The 7002nd CSU provided outstanding construction support.

This project provided the men of the Pavements and Equipment Section with intensive technical and practical training. We need more projects of this type as an integral portion of our wartime role in RRR and BDR will involve horizontal construction and repair.

WEATHER SHELTERS

An 11-man construction team headed by Pavements and Equipment personnel arrived at RAF Lakenheath in mid September 1981 to reconstruct three aircraft weather shelters, two of which were 50 feet by 80 feet and one 50 feet by 160 feet.

These shelters will provide storage space for AGE equipment, fuel cell storage, and a corrosion control section. The shelters consisted of previously used steel framing, corrugated roofing, and corrugated steel siding. Two of the shelters were erected on existing concrete slabs and the third one had to have the concrete floor, footers, and driveway constructed. One shelter was enclosed on both ends with structural metal panels completely fabricated by the project team.

The project was hampered constantly by snow, ice, rain, and high winds.

Lessons learned: Projects of this nature should be performed during summer months; however, knowledge to perform during the winter months must be attained. Special equipment, heaters, and winter gear must be ordered, stored, and ready for contingency operations. The project was completed in good time, with a good finished product. Crew size and skill levels were adequate and were kept busy. Outstanding support was received from all Lakenheath organizations. Total project cost was approximately \$141,506.

WETHERSFIELD RED HORSE SUPPLY

This project converted a pre-World War II quonset to a modern supply warehouse with office space for Materiel Control staff. This required extreme skill to weatherproof and seal the building from moisture and rodents. To shed the water away from the low construction site, exterior underground drains were required. The high turnover of crew, in order to train the new Air Force RED HORSE personnel, kept the project manager busy ensuring quality work and providing a motivating incentive. With the authority to hook up utilities retained by the PSA, it was impossible to test utilities until after nearly all work was completed. Without the heating system being up and available for heat, a Herman-Nelson type heater was used to dry out the facility enough to seal the floor and paint the interior.

Since this was a training project for the 010 and 030 skill levels, the schedule was set for 90 days. The project was completed in 85 days.

Lessons learned: Even training projects this size need some continuity in skilled personnel. Those on training who are allowed to remain with the project until completion appeared more motivated than those who were assigned for a short period. Also, by remaining on a multi-skill project through all phases of construction, their intrinsic value to both the Air Force and RED HORSE was enhanced as they learned related tasks and became multi-skilled. Training projects where PSA retains control of the utilities provide an unneeded challenge to the trainer, inasmuch as the trainee does not get the positive stroke of "THERE - IT WORKS."

BRIGHT STAR 82, SUDAN

This Joint Chiefs of Staff exercise was a Rapid Deployment Force joint service operation that thoroughly tested the squadron's ability to rapidly mobilize, initiate, and sustain bare base contingency operations. The RED HORSE team was tasked to build an AF tent city, provide encampment engineering support, and operate a field kitchen for all personnel of the Rapid Deployment Joint Unconventional Warfare Task Force (RDJUWTF).

Overcoming the traditional "role and mission" rivalry with our US Army counterparts, the 819 CESHR's significant contributions and professionalism were highly praised in a letter of commendation from the US Army commander of the RDJWTF. In part, the letter states, "He and his men arrived and down-loaded at about 1230 local, on 26 November 1981, and at 1830 the first hot "B" ration was served making our Thanksgiving Day a memorable one in the Sudan. The resourcefulness of food service personnel in masterful menu planning, the long arduous hours spent in setting up the cantonment area, and the obvious high level of morale of the entire unit contributed greatly to the final success of the Sudan bare base portion of the exercise."

Lessons learned: Practice makes perfect. The ability to go out and do peacetime construction exercises. The ability and capability learned and attained through the peacetime construction of projects throughout Europe is of great benefit to the Air Force. RED HORSE'S readiness depends on day-to-day training and operations.

RAF ALCONBURY AMMO IGLOOS

A five-man construction team headed by the Pavement and Equipment Section was sent to RAF Alconbury on 3 September 1981 to accomplish a \$66,000 waterproofing project on a six compartment, 23,715 square foot ammo storage igloo. The project consisted of removing 1,318 cubic yards of existing topsoil, placing 440 cubic yards sand cushion, installing a 23,715 square foot triplex membrane, replacing 878 cubic yards of topsoil, and installing 470 feet of french drain. No major problems were encountered except for some rain and wind. Outstanding support was received from the 10th EMS, CES, SPS and Supply Squadrons. Because of the support received and team performance, the project was completed on 14 October 1981, 45 days ahead of schedule.

The following community service projects provided required hands-on training for our equipment operators. The finished products endeared the 819th RED HORSE to the local British communities.

COLNE VALLEY RAILROAD

This was a community relations project to assist in the reconstruction of an antique railway station and tracks between Castle Hedingham and Great Yeldham. The railroad, know as Colne Valley Railway, is a local non-profit making organization interested in preserving steam railways. A crew of four from Pavements and Equipment moved approximately 20,000 cubic yards of soil to provide a level surface in which to extend the road bed and also moved two antique Swedish-built railway coaches from Cambridge to Sible Hedingham. The coaches, 60 feet long and 12 feet wide, required special handling due to their size and the type of road they were hauled

over. A major portion of the work was completed on weekends. The military relationship with our local communities was greatly enhanced through 819 CESHR support and assistance.

RIVER STOUR

This was a public relations project involving the restoration of a former navigation basin at Sudbury, UK. The basin was originally constructed in 1710 and served as the terminus of the River Stour navigation, whose unique type lighters (barges) were world famous. It had become disused during the first World War and, since then, had been partly filled with rubbish. Prior to excavating, several large trees (six feet in diameter) and a tremendous amount of underbrush had to be removed. A crew of six then removed all rubble, excavated tons of silt, and sloped the sides to provide the basin with a three-foot depth of water. The crew was required to work in almost continual rain and resulting extremely muddy conditions with a very poor soil foundation to set equipment on. The lack of proper equipment was overcome through the use of the host location's 20-ton truck mounted crane. The crew worked seven days a week in order to complete the job one week ahead of schedule. In addition to constructing the basin, a 100-year-old lighter (barge) had to be moved eight miles over narrow, winding roads. Due to the weight and size, the Stour River Trust was unable to find a contractor with this capability. The 819th easily responded to this challenge; moving the lighter on a flat bed trailer in one day.

REMOVE AND RE-INSTALL BELLS AND BELL CAGE ELEVENTH CENTURY COMMUNITY CHURCH FINCHINGFIELD, UK

Bell tower of typical East Anglian, 11th to 14th century shale and stone masonry construction. The bell cage and cradle were constructed of hand hewn oak beams assembled with wooden dowels.

The bells are of the type which require retoneing every 300 years. The cage was last removed and reassembled in the mid 1600's. Weight of the seven bells ranged from 1,000 pounds to over 2,000 pounds. Their weight and motion over the past 300 years had caused wear in the column and was allowing the bell cage to shift in the tower. Therefore, the British engineers determined that the time was appropriate to have the bells retoned and replace the bell cradle.

The RED HORSE crew's job was to disassemble the bell cage and lower the bells an estimated 100 feet and transport them through the ancient churchyard for transport to the London Bell Foundry. Following disassembly of the 11th century oak beam bell cage, the team was required



Figure 41
Civic Action Project
Finchingfield Church, U.K.

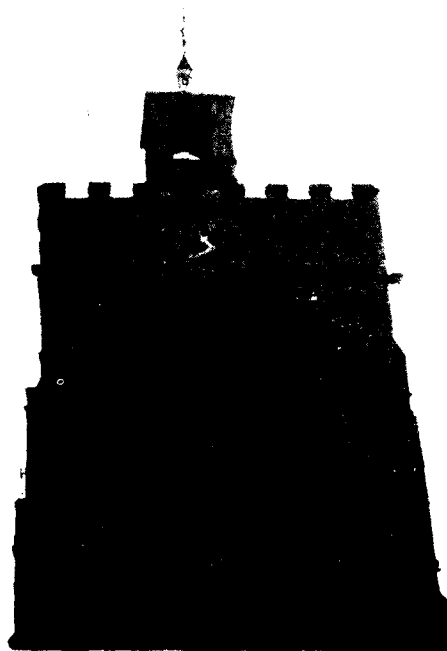


Figure 42
Getting Ready to
Move the Church Bell



Figure 43
Mix Truck in Place

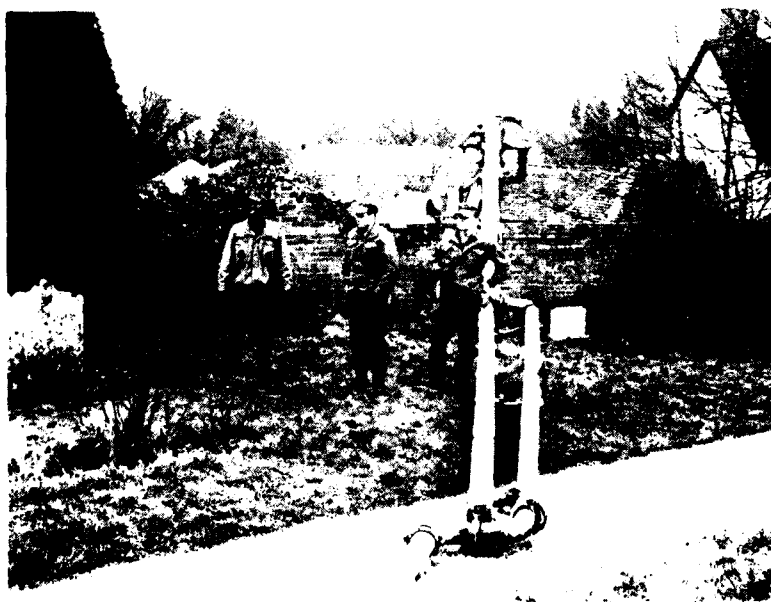


Figure 44
Running the Concrete Pipeline

to pour an interior concrete ring beam inside the tower to support a modern I-beam bell cage. The bells were raised and reassembled into a factory precast steel cage.

The disassembly crew consisted of 12 people, headed up by a structural superintendent. The crew that set the steel rebar, formed up and placed the concrete, consisted of five structural technicians and one structural superintendent.

Both the tear down and reassembly crews faced problems which were created by craftsmen over 600 years ago; i.e., how to disassemble the bell cage without cutting or damaging the oak beams which were valued at \$20,000 and how to remove and lower each bell since they had to be removed in special sequence to avoid throwing the tower and cradle into an out-of-balance condition. If the sequence was not exactly maintained during both the tear down and reassembly stages, irrevocable damage would have been caused to the tower. Another puzzle was how to place over 15 cubic meters of concrete into an approximately 200 square foot area at over 100 foot height from a transit mix truck sitting 100 yards away.

These problems and many others were overcome through the use of a hand-operated hoist and hydraulic hand carts, as well as the use of modern day mechanical concrete pumping techniques.

Insight was gained into 11th century methods of construction--especially how large, weighty items can be moved great distances vertically or horizontally by manual means. The goodwill generated in Finchingfield located one mile from RAF Wethersfield resulted in untold housing and community support for our Air Force personnel.



Figure 45
Civic Action Project
Sudbury, U.K.
Canal Clearing



Figure 46
Track-Type Loader About to Get Stuck!



Figure 47
Clearing Operations



Figure 48
Getting Closer



Figure 49
Bringing in the Bucket

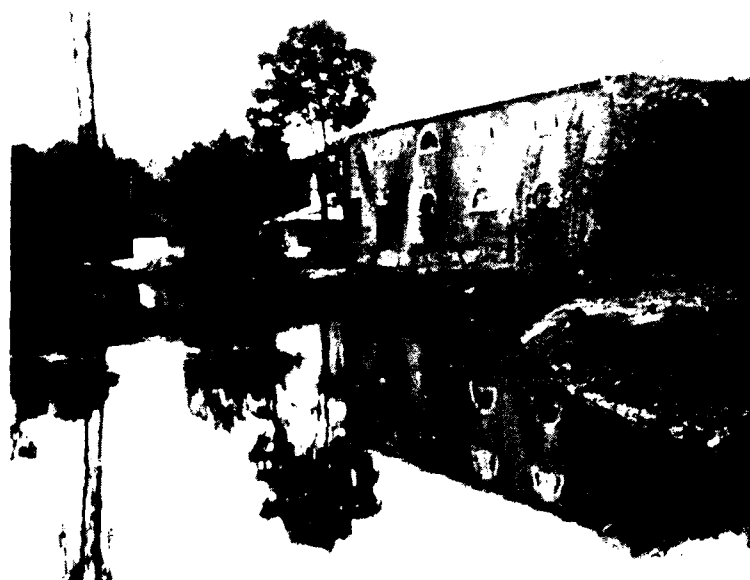


Figure 50
Done!

CHAPTER V

ENGINEERING

ENGINEERING BRANCH

With the relocation of the squadron to RAF Wethersfield in April 1979, there appeared a variety of situations and challenges unique to the operations of a typical RED HORSE engineering branch. Upon initial arrival, we were faced with upgrading a previously inactive installation and learning to cope with engineering design using foreign building codes/regulations. Gradually, our engineering support branch moved out from Wethersfield to virtually every US installation in England, Europe, and Southwest Asia. The first few years have proved to be a learning experience in both the management and technical areas within the branch.

In providing the engineering design support for about 90% of all our construction projects, we encountered a design task not normally handled by a RED HORSE engineering branch. Typically, for stateside squadrons, the vast majority of engineering design is accomplished by the host BCE organization. The RED HORSE engineering branch usually acts as the design and constructability reviewer with a designated RH engineer. As the BCEs within England are only staffed to function as a liaison between the base and DOE/PSA, design for projects in England has been our responsibility. Because of the quantity of design throughout England and several classified sites, three teams of CONUS TDY engineers/site developers have been an intermittent part of the branch, working solely on design projects. A need exists for a permanently assigned engineering design team to enable RED HORSE engineering officers to accomplish their required role as on-site project engineers. Our role as project engineers has been essentially in an advisory capacity, only periodically monitoring the project. The project manager role has been levied on our senior NCOs who have met the challenge admirably. But as more technical sophisticated projects are given to RED HORSE, the need for an experienced engineer as project manager becomes more imperative.

The design work accomplished by the branch started out with the facility requirements for our own beddown at RAF Wethersfield. As the squadron was settling into its new home, numerous projects were undertaken to upgrade the previously inactive installation. Designs included a new MWR facility, vehicle maintenance complex, and renovations to activities such as the Child Care Center, Security Police Headquarters, and the Pizza Pub Restaurant, to name just a few. At the same time, a new post office facility was designed for RAF Woodbridge, and a variety of other repair/renovation projects were accomplished throughout various bases in England. In the past year our staff, including TDY design assistance teams, have been heavily involved in the design of the classified sites "A," "B," and Creek Hold projects.

Initially, one of the most important lessons learned was that our design had to comply with the British Building Regulations rather than the US National Building Code that we were using in the US. Inherent in the British Building Regulations were the British electrical and plumbing regulations which further tasked our engineers. Often seeming to be a

reinvention of the wheel, all the engineers struggled through the tedious, time-consuming process of researching essentially every aspect of their building design. Foreign codes and regulations, coupled with the use of a new breed of construction materials, created challenges that were, in the US, often considered to be mundane topics.

Everyone knew that a 2" x 4" stud was actually 1-1/2" x 3-1/2" when delivered to the construction site, but this was not so in England. After finding out that lumber is always considered as the full-dimensional size and often delivered "green," we again learned a new system for doing things. Knowledge of the construction materials to be used in the actual construction is imperative for a professional design and "finished-end-product." We arrived having the conception that asphalt-shingled roofing, heat pumps, and romex electrical wiring were the "way-to-go." Quickly, we discovered that among other things, corrugated asbestos roof decking, hot water radiators, and separately grounded rigid metal conduits were the established British systems, and they were not destined to be changed in the near future. A thorough familiarization with the construction materials available has been another time-consuming, but essential, part of the complete process in producing a better quality of facilities.

The design of facilities in countries other than England has brought about more significant aspects of design and construction to be considered. The type of heavy equipment support available in Turkey, for example, was an important factor in the construction of the Turkish racquetball courts. Knowledge of impending equipment shortfalls in specific countries has brought about designs tailored around available methods of construction. In that same light, material availability, or nonavailability, at some of our classified sites has produced designs tailored for specific countries. A significant lesson learned was that the engineer could never assume compatibility with local construction standards or availability of a typical construction material existed. Each country and location had to be approached differently, thus resulting in contingency engineering at its best. The site developers and the engineering assistants, as well, were faced with unique situations and conditions. Some of the lessons that were learned dealt with using the metric system of measurement and drafting support of a substantial design schedule, while maintaining on-site surveying capability. The influx of inexperienced airmen into the drafting section resulted in significant training requirements.

ENGINEERING ASSISTANTS

One of the major problems encountered in the Engineering Assistant Section was the lack of experienced personnel. Most engineering assistants do not have the wide range of skills required to support the European RED HORSE. This problem manifested itself in two areas. A large amount of drafting was required to support the heavy design load, and several of the

sergeants who were assigned to the squadron had little or no drafting experience in their previous assignments. As a result, most design time was lost and drawings had to be reaccomplished. Although time has rectified this problem through oncoming rotations of personnel, they are now receiving three-levels from technical school. With a nucleus of personnel, this problem should not be as severe as before.

Going hand-in-hand with the problem of the heavy drafting load, when our construction schedule began to pick up, so did our site survey work. Although we were deficient in this area, with only two men having any previous experience, we were able to work the inexperienced people in. We now have a fine nucleus of experienced surveyors. At this point in time, the construction workload required surveying almost daily just to keep our home station work going, not counting the surveying that is required for our off station work. Now that we have experienced personnel available, in most cases, it does not require more than one surveyor at off-site locations. However, when a survey is required, it normally requires a minimum of two people and usually three people to adequately accomplish the task. This, again, puts a heavy load on the personnel remaining behind who are doing the drafting. This causes the design engineers to outnumber the engineering assistant personnel by ratios of 2:1 and 3:1, thus increasing design time.

CHAPTER VI

LOGISTICS

LOGISTICS BRANCH

The Logistics Branch provided a broad range of support to the 819th CESHR during the period 1979-1982. Vehicle Maintenance, Materiel Control, Food Service, Medical and Logistics Planning Sections all worked diligently to keep the squadron on track as project teams and individuals spread out across the European land mass to tackle the many construction and mobility training taskings assigned by HQ USAFE. When the squadron relocated to the United Kingdom in 1979, the men of the Logistics Branch were immediately involved in all aspects of the relocation, especially those involving preparations to receive the entire shipment of the squadron's vehicle fleet, shop tools, equipment, and some supplies. Logistics Support Directives (LSDS), supply accounts, equipment custodian identification and training establishment of the vehicle maintenance computer accounting system, budget control, personnel control, and many other administrative functions kept the "log" people busily, if not happily, engaged in setting up housekeeping in the United Kingdom. Some lessons were learned, but the one that had the greatest impact was the way in which the shipment of the squadron's equipment was handled. Although the corporate memory is rather hazy at this point, it appears that at the "grassroots" level no effort was made to effect an orderly transfer of materials or accountability from the CONUS to the UK. Very little, if any, quality control was used to ensure that only serviceable items were shipped, and that those items were afforded maximum protection from damage. Apparently, very little TMO expertise was available to direct the preparation and ultimate packing of the shipment. In this instance, the lesson learned is very obvious. Squadron strength movements must be preplanned and should involve representatives from the numerous Air Force specialties that would normally be associated with such a move. Supply, Finance, Transportation, and others must assume the ultimate responsibility for getting the squadron equipment to the new location in order to preclude any extraordinary delays in reaching operational status. This was one area that created the greatest "heartburn" for Logistics personnel. Other problems surfaced; however, let the section supervisors tell their story.

MEDICAL SECTION

Two medical personnel assigned to RED HORSE, Independent Duty Medical Technicians (IDMT), were used to support deployments, provide buddy care training, supervise the medical aspects of the squadron's mobility mission, and maintain mobility medical equipment and supplies, in addition to augmenting the base medical aid station. During the past three years, these technicians were used extensively by the base medical function to provide a wide range of medical services. During this time, they worked an inordinate number of hours in overtime, at night and on weekends, in an effort to give the population at RAF Wethersfield an effective medical care program. However, as reflected by the overtime, the medical

personnel have been hard-pressed to meet the expectations of the base, because of the low number of medical personnel assigned to support the mission. An outcrop of this problem was the assumption that the RED HORSE medics are the "property" of the Detachment and, as such, available for scheduling as base management saw fit. The squadron directed that the two medical personnel, authorized to RED HORSE, be scheduled first to meet the squadron's commitments and then, thereafter, used to augment the Detachment.

The RED HORSE IDMTs became a vital part of the Field Training cadre, instructing field hygiene and sanitation, and providing first aid training for personnel deployed in the field. During exercises, they deployed with RH-1 and RH-2 forces, sharing in all mobility duties, as well as providing a medical presence. The medics also instructed Buddy Care classes for all RED HORSE personnel. One medic deployed to the Sudan in support of Exercise Bright Star 1982, a Rapid Deployment exercise, and he was very successful in keeping RED HORSE and other deployed personnel free from dysentery, heat exhaustion, insect-borne diseases, and other medical problems peculiar to the locality. This medic was exceptionally well-versed in medical field operations as was evidenced during participation in medical RED FLAG exercises. The value of the training he received during RED FLAG should not be understated, and all medical personnel assigned to RED HORSE should be afforded an opportunity to receive this training.

RED HORSE medics were responsible for maintaining RH-1 and RH-2 medical supplies in deployment-ready condition. Therefore, a separate RED HORSE medical supply account had to be established with the host base supply function. The process of establishing this support highlighted the need for the Detachment supply function to learn and understand the intricacies of the medical supply system. These problems were resolved and an effective pipeline for medical supplies and equipment was established.

The "on-again, off-again" authority for an Air Transportable Clinic (ATC) is now in its "on-again" cycle, and action has been taken to acquire an ATC for RED HORSE use. A doctor assigned to RAF Chicksands has been designated to augment RED HORSE deployment.

The medical section is an integral and important part of the RED HORSE team and continues to provide quality health care services to all personnel at home and in the field.

FOOD SERVICE SECTION

In April 1979, the base dining hall and its equipment were in a virtual mothball state. Equipment had to be restored to serviceable condition. Channels for obtaining food supplies had to be established to include funding accounts and transportation arrangements. Numerous Air Force and DOD food service forms and publications had to be acquired and maintained, and the dining hall had to be operated by the very few food service personnel who had been programmed to arrive as early as the spring of 1979.

When you consider RED HORSE having food service manpower authorization for 15 persons (including two MSgts and one TSgt) as compared to the six assigned to Detachment 1, 10th TRW (the highest ranking of which was one TSgt), incoming food service personnel were primarily RED HORSE personnel. The RED HORSE food service superintendent operated the dining hall under the supervision of the Detachment 1, 10th TRW Chief of Services, while administratively reporting to the RED HORSE Chief of Logistics.

By December 1980, twelve RED HORSE food service personnel were working regularly in the base dining hall. As the number of food service personnel increased, conflicts arose. Detachment and RED HORSE cooks, while required to work harmoniously to accomplish the same mission, had separate schedules, attended separate commander's calls, and were assigned details by two separate organizations. Report channels were then realigned to coincide with the dining hall structure without regard for organizational colors, and extra duties were coordinated as much as possible. The RED HORSE superintendent's APR was written by the Detachment 1, 10th TRW/SV and indorsed by the 819th LG. This arrangement proved unsuitable to the 819th, because it resulted in all food service efforts being directed toward accomplishment of the dining hall's mission. Meanwhile, special RED HORSE requirements were neglected. Although all RED HORSE cooks ultimately worked for the RED HORSE food service superintendent, his chief concern was the mission of the dining hall. Field training and weapons training requirements had to be met, and field kitchen mobility equipment had to be ordered and maintained.

Another realignment resulted in March 1981; the 819th traded one of its two MSgt authorizations for the Detachment's TSgt authorization, thus giving the Detachment a MSgt to supervise the dining hall and leaving the 819th a MSgt who could now be divorced from the dining hall so that he could take care of all administrative matters for the RED HORSE cooks, such as scheduling them, as required, to meet training and TDY requirements and to coordinate schedules with the dining hall. RED HORSE was, again, in full control of its cooks, although it continued to assign almost all of them to the dining hall for duty. One SSgt was, however, assigned to the squadron mobility office on a full-time basis.

In December 1979, the 819th was tasked to establish Prime RIBS training for all USAF cooks assigned to the UK. This tasking required the full-time utilization of two more of the cooks. Considerable effort went into constructing a "hardened" field kitchen in the trees on the north side of the runway, which eventually consisted of a kitchen tent, dining tents, catwalks, a washing area, soaking pits, and a refueling area. The first four-day class was conducted March 1980. The training consisted of two days of classroom training and two days of hands-on training, preparing at least two meals for an average of 50 volunteer customers who preferred the "tree-line" restaurant to the dining hall. Between March 1980 and September 1981, 196 student cooks were trained to prepare food under field conditions.



Figure 51
Food Service
Field Kitchen Cook Tent
Hardframe

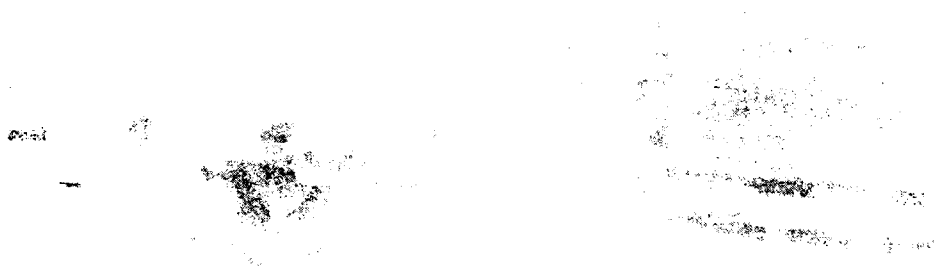


Figure 52
Water Buffalo, Refectory,
and Dining Hall Setup



Figure 5
Ready to Eat



Figure 54
Ready to Clean Up

However, in the spring of 1982, the Prime RIBS tasking was rescinded. The training was to be centralized at the 7002nd and CEF, Ramstein AB, Germany, and was to be expanded to include search and rescue operations, mortuary affairs, billeting, and field laundry training.

Meanwhile, the LG, having only one logistics planner manpower authorization, assigned squadron disaster preparedness duties to the food service superintendent. Although much initial effort was expended in ordering, receiving, and storing equipment, the most persistent part of the additional duty has been the constant issuing and retrieving of gas masks, chemical suits, boots and gloves, and decontamination kits.

The one responsibility of the RED HORSE Food Service Section which has underlined and taken priority over all others has been deployment readiness. During the first three years in the UK, 819th cooks demonstrated their deployment readiness through a string of TDYs, deployments, and exercises. RED HORSE cooks deployed in support of Exercise CORONET HAMMER at RAF Boscombe Downs (April - June 1980), Exercise Displayed Determination in Greece (September - October 1981), Project Creek Hold (January 1982) and others. During the Rapid Deployment Force Exercise Bright Star 1982 in Sudan (November - December 1981), six 819th cooks were totally responsible for feeding more than 300 Army, Navy, Marine, and Air Force personnel, hosting an additional 300 Sudanese, Egyptian, and American military and diplomatic personnel at a special American-style barbeque at the termination of the exercise.

Additionally, RED HORSE cooks were called upon to augment the instructor staff on the 7002nd DEF's Prime RIBS Training Center at Ramstein AB, Germany (May - October 1982) to augment USAFE staff assistance teams (September 1980, January 1981) and to repair Harvest Eagle field ranges at Camp Darby, Italy (November 1981). RED HORSE food service personnel also were required to continuously man a food service position at Elf-1 in Saudi Arabia on a 45-day TDY rotational basis since September 1981 to the present.

In summary, during the first three years of the 819th's stay in the United Kingdom, RED HORSE food service personnel have been double-tasked. In addition to the typical RED HORSE training, TDY and deployment requirements, HQ USAFE/DP has also counted 819 CESHR cook authorizations against RAF Wethersfield dining hall requirements and, consequently, has authorized Detachment 1, 10th TRW/SVF only seven personnel. Although Detachment 1 has recently been successful in obtaining seven additional manpower authorizations, those authorizations have yet to be filled.

VEHICLE MAINTENANCE SECTION

The 819th Vehicle Maintenance Section proved itself to be one of the most supportive sections within the squadron. The extremely high caliber of the men assigned ensured that the rest of the squadron had the vehicles

they required to accomplish their mission. The superior professionalism of LGT was proven during the initial beddown of the squadron within the UK and throughout the three years that followed.

In April 1979, the section consisted of two men who provided maintenance on several vehicles that were loaned to the squadron by the host base. In May, one more mechanic arrived. During the same month, Building 199 was designated as a temporary vehicle maintenance shop. This facility had been disused for numerous years and was in a sad state of repair. The three went to work cleaning it and preparing it to support vehicle maintenance operations. Toward the end of June, the superintendent and other mechanics arrived, as well as a shipload of vehicles and equipment from McConnell AFB.

During July 1979, business in the shop was brisk. Fifty percent of the vehicles suffered shipping damage, and a number of them were missing parts and accessories. This generated a tremendous workload for the men, however, they eagerly accepted the challenge. That month also saw the establishment of the VIMS account, a separate supply account, and a bench stock account. The assignment of a Materiel Control Specialist to Vehicle Maintenance at this time aided tremendously with the supply and bench stock accounts.

At approximately this time, the Power Production Shop was moved in to share the facility until assigned its own. The two shops worked together, sharing each other's workload until the end of September when additional vehicle mechanics arrived, and Power Production was assigned a facility of its own.

The period from 1 October - December 1979 saw an increase in personnel and equipment, the establishment of a complete maintenance control and analysis section, a diagnostic and quality assurance section, plus ample mechanics and supervisors to establish two more work centers and a machine shop. The Vehicle Maintenance Control Section had also received additional manpower. It continued to provide superior service to the mechanics, while ensuring that all the supply publications, parts, manuals, and reference material which had been destroyed in shipment were reordered. Lack of adequately secured storage required self-help construction of shelving for bench stock storage and a tool crib for security for extremely "hard-to-come-by" tools. Also, during this period, maintenance control remodeled a small portable building set-up within the main shop to use as a control center. Although small, it gave them an area in which they could develop vehicle records and update computer products for the VIMS system. The arrival of our machinist was a definite blessing. Machine operators were set-up in the old FMS shop, using WRM machines. Although still operating from that shop at the end of the first three years, the machines have been transferred to the vehicle maintenance account. The machinist's work was cut out for him when he arrived. All the machines required repair and service. After completing this work, he

began manufacturing numerous vehicle parts, as well as hardware required for initial beddown projects. The continuing efforts of the Machine Shop have definitely enhanced the squadron's capabilities.

The first quarter of 1980 saw continuous improvements in the fleet's condition, size and utilization. In-house facilities improvement continued. A fixed-air compressor and electricity for the operation of the welder and other equipment was installed, and the heaters were finally repaired. With the arrival of the initial RRR vehicles to the six operating locations in April 1980, came a gradually increasing maintenance headache.

Being tasked with maintenance responsibility for vehicles located at six operating locations, each 50 miles distant from RAF Wethersfield, generated insurmountable logistics and manpower problems. Not until 1 April 1982, primarily through the concerted efforts of the vehicle maintenance superintendent, was responsibility for the maintenance of these fleets reassigned to the six bases.

By 1 July 1980, eighteen personnel had been assigned to the Vehicle Maintenance Section. Manning included AFSC's 47299 (1), 47471 (3), 472X0 (8), 472X2 (2), 472X4 (3), and 47270 (1). The number of registered vehicles assigned for maintenance had increased from 92 to 105, not including RRR vehicles at the Operating Locations (OLs). The VDM rate had averaged 4.1% during the past six months and the VDP rate 6.1%.

From 1 January 1981 to 1 July 1981 manning increased from 19 to 23, the average VDM increased to 4.9% and the average VDP increased to 6.3%. Vehicle gains included a 15-ton crane, a D-6 dozer, a backhoe, a line truck, five truck tractors, two pickups, and two buses, thus increasing the total fleet to 126 vehicles.

By December 1981, the number of vehicles had increased to 131 (including, at last, a vibratory roller) and personnel assigned now totalled 28. The six month average VDM had increased further to 6.7% and the VDP rate had decreased to 5.3%.

Toward the end of 1981, Vehicle Maintenance facilities expanded to include Buildings 157 and 198. After much self-help remodeling, the Maintenance Control and Analysis Section moved into Building 157, and DQ and A moved into Building 198; both shops finally received the space required to function normally. The Body Shop was now able to work on more than one vehicle at a time. The installation of the vehicle lift and receipt of diagnostic equipment also enabled the DQ and A Section to improve their already high-quality inspections.

In spite of the conditions highlighted, the Vehicle Maintenance Section operated like a well-oiled machine during the first three years in the UK, providing untiring support for the squadron. The shop supplied highly qualified manpower in support of projects in Turkey, the Middle East, Hahn AB, Spangdahlem AB, and Norvenick, Germany. The Vehicle Maintenance

Section also supported a special project for HQ Third Air Force, assisting the US Army, repairing vehicles off-loaded from ships at Liverpool in addition to keeping a fleet of as many as 343 vehicles operational at the six OLS. These accomplishments and the daily maintenance of the on-station fleet were performed by the finest vehicle maintainers in the Air Force. Each man gave his all to support the squadron and its mission during the initial three years in the United Kingdom.

MATERIEL CONTROL SECTION

The accomplishments of the 819 CESHR Materiel Control during the period April 1979 through June 1982 underlined the RED HORSE motto "can-do, will-do, have-done." Confronted with numerous challenges, Materiel Control aided immeasurably in providing Headquarters, United States Air Forces in Europe with a highly responsive RED HORSE Civil Engineering capability.

The 819th CESHR located at McConnell AFB, Kansas was alerted for relocation to RAF Wethersfield in the fall of 1978. In April 1979, with the arrival of the initial cadre of three supply men in the UK, the RED HORSE Materiel Control was officially reestablished. Initial responsibilities consisted of establishing a base of operations which was first located in Building 151. Upon "setting up shop," Materiel control began the process of establishing organization records with the Chief of Supply to support our varied logistical requirements. Our base supply support was to be derived from RAF Alconbury located 50 miles distant. In accordance with the Program Guidance Letter (PGL) for 819th's relocation, unit Materiel Control was given all responsibilities for pickup and delivery of material for all of RAF Wethersfield. (Although short-lived with LGS, that responsibility continued to be borne largely by the 819th Equipment Section for two years before it was assumed by host base Transportation Section.)

The primary concern during the relocation period was the shipment, arrival, movement, identification, and inventory of unit-owned assets from McConnell AFB. Shipping action commenced in April 1979 with subsequent receipt occurring early in July of that year. Upon the arrival of supplies and equipment at the Tilbury Commercial Docks in London, material was picked up and transported to RAF Wethersfield. It was at this state that problems began for Materiel Control. To their dismay, it was discovered that the majority of shipping containers were not identified as to the ultimate owner or content. Devoting numerous hours, which ran into days, then months, they were finally able to reconcile the shipment and proceed with other matters. All equipment was ultimately inventoried. EAID custodians were identified and trained and equipment accounts were established.

It was at this stage that operating instructions were initially prepared. Being an off-base supply account entailed establishing numerous procedural agreements. These were accomplished in a timely manner and fully operational status had arrived at long last.

Mobility bags, both type A and B, were built up. In conjunction with the increase from 200 to 400 personnel, the bag build-up was not as simple as it sounded. All incoming assets had to be inventoried, shortages requisitioned, and upon receipt of the shortage fills, the bags had to be assembled. In addition, stock levels had to be established for replacement items. Within a six month time frame, all requirements had been satisfied and Materiel Control personnel assembled the contents of 800 mobility bags. Concurrent with the bag build-up, procedures (which were constantly refined over the last two years) were developed for the storage, issue, and control of the bags. It should be noted that the management of this phase of supply operations received commendable comments during the unit's only Management Effectiveness Inspection (MEI) which was conducted during the June/July 1981 time period. AF Forms 2009 were used as a warehouse locator system mobility bag items in storage.

Early in 1980, the United Kingdom Department of Environment/Property Services Agency (DOE/PSA) was approved as a valid source of procurement of project material. Once the approval had been obtained, numerous discussions were held between DOE/PSA representatives and RED HORSE Materiel Control and Cost Accounting personnel to develop operating instructions. Areas of concern were requisitioning, receiving, storage, issue, invoice payment, and accountability. Finally, after satisfying US Air Force and DOE/PSA requirements, procedures were drafted, coordinated and implemented. Requisitioning of material throughout the DOE/PSA system had begun in September of 1979. In a three-year period, approximately 8,630 line items were requested; they valued over \$3 million. Two inventory management specialists (645XOs) were continuously assigned to the task of requisitioning material through this system.

Base supply requests presented numerous challenges to Materiel Control, predominately as a result of RED HORSE being an off-base supported activity. The biggest problem occurred in obtaining retail sales support, consisting of base service store items, tool issue center items and individual equipment. Located 50 miles from the support base, it was not feasible to have each shop utilize the self-service store operation. Procedures were established whereby Materiel Control personnel requisitioned all requirements. This placed an additional work load on assigned personnel, as retail sales requirements are normally customer responsibility. In addition to retail sales, the base supply Materiel Control Section faced a constant deluge of other requirements such as EALD (AF Form 601b) requests and normal call-in requests.

Storage facilities upon RED HORSE's arrival in the United Kingdom were virtually nonexistent. It was during the July 1979 time frame that it was realized that space made available in Building 151 was already inadequate. A search of available storage space resulted in Materiel Control relocating its center of operations. Building 157 was established as the Materiel Control office, and Buildings 197 and 198 were designated storage warehouses. From the period July 1979 until January 1982, these facilities comprised the whole of the operations. During January 1982, construction of the new Materiel Control facility in Building 74 was

completed, and LGS moved in. Located within the facility is the superintendent's office, the base supply Materiel Control, the DOE/PSA Materiel Control, all holding area receiving functions, the mobility bag storage function, the individual equipment unit and warehousing space for the storage of small-sized construction materials. Bulk storage was relocated from Buildings 197 and 198 to Building 73, but the outside storage area is, at this time, still located in the RED HORSE equipment yard, approximately 1/2 mile distant. There is still a need for outside storage space near the other Squadron activities and shops. Storage inside Building 73 was upgraded during 1981-1982 with the purchase of dexion storage shelving and pallet racks. Erection of this equipment was accomplished by Materiel Control personnel on a self-help basis.

Much attention was devoted to both mobility and RRR training, especially since 1981. Mobility timetables, checklists, and packing and load lists were developed in support of the unit mobility posture. In addition, section personnel completed all required RRR exercises at various United Kingdom bases.

Small arms and munitions accounts were also established. Until late 1981, all small arms belonging to RED HORSE were stored at RAF Alconbury. This presented numerous obstacles when they were required during mobility exercises or for field training. With the April 1982 completion of a new security police armory constructed by RED HORSE, all small arms were transferred to RAF Wethersfield for permanent storage. Action was also accomplished to establish a munitions supply point at Wethersfield, and all munitions, mobility, and training were available for immediate use.

In line with the unit construction program, RED HORSE generated vast quantities of residual material. The holding area was constructed to include a residual material holding area. Initially, accounting of material was completely manual and storage was poor. With the residual material area expanding to over 800 line items, the addition of storage units greatly assisted in their warehousing. Following the squadron's purchase of a word processing machine, Materiel Control developed a program for tracking residual material which proved to be very cost effective. During the only higher headquarters inspection afforded RED HORSE, Materiel Control was given an overall satisfactory rating.

In summation, knowing exactly what Materiel Control had available to work with and the level of support it has since grown to provide, I must say on behalf of the 819th Supply Section that it has truly upheld the RED HORSE motto "can-do, will-do, have-done."

LATE
LME